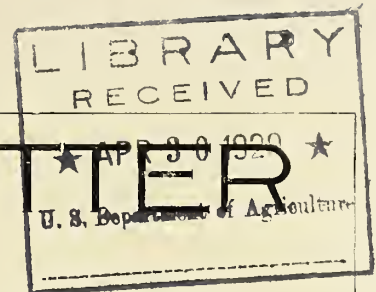


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# THE NEWS LETTER

## OF THE

# BUREAU OF PUBLIC ROADS

VOL. 4, NO. 6

APRIL, 1929

A. C. ROSE, EDITOR

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ADDRESS OF GOVERNOR ARTHUR M. HYDE  
BEFORE THE EIGHTH ANNUAL MEETING  
OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS  
DECEMBER 4, 5, 6 & 7, 1922, AT  
KANSAS CITY, MISSOURI

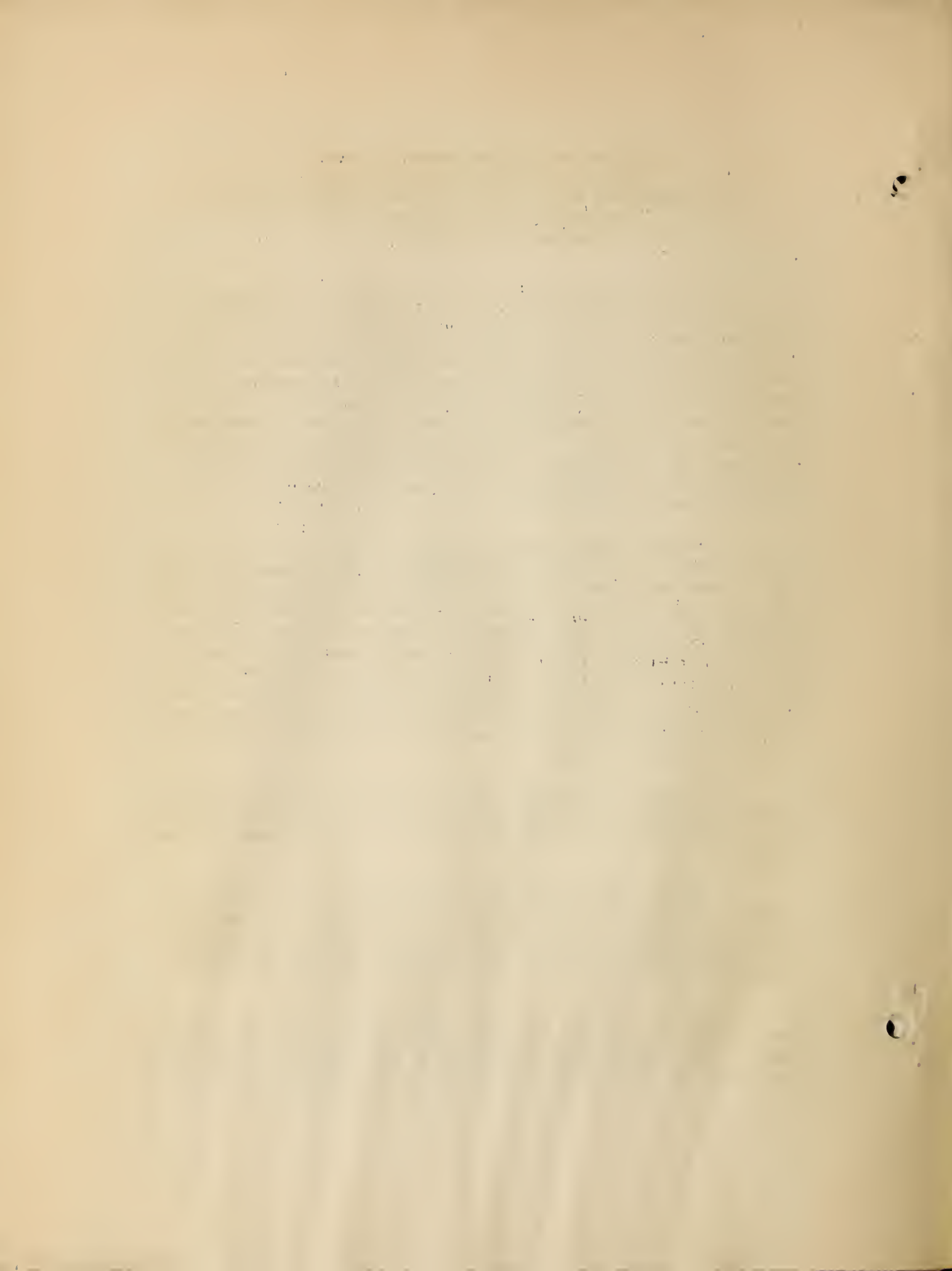
IT IS A PLEASURE TO ME, I CAN ASSURE YOU, TO ADDRESS THIS BODY OF MEN WHICH IS SO WELL REPRESENTATIVE OF THE GOOD ROADS MOVEMENT IN AMERICA. BACK OF EVERY ONE OF YOU, OF COURSE, IS THE ROAD ORGANIZATION IN YOUR OWN STATE, AND BACK OF THAT THE PEOPLE OF YOUR STATE WHO HAVE INDORSED AND MADE POSSIBLE YOUR ACTIVITIES ALONG THE LINES OF GOOD ROADS. AND SO IT IS NOT TOO MUCH TO SAY THAT IN WELCOMING THIS ASSOCIATION WE ARE WELCOMING THE PEOPLE OF AMERICA. I HOPE YOU MAY BE ABLE TO DO SOMETHING WHILE YOU ARE IN MISSOURI, OR TO SAY SOMETHING, THAT WILL BE STILL FURTHER AN INSPIRATION TO THE PEOPLE OF AMERICA IN THIS GREAT CONSTRUCTIVE PROGRAM.

EVERYBODY KNOWS EVERYTHING ABOUT ROADS. IT IS THE ONE SUBJECT UPON WHICH EVERYBODY POSSESSES ALL THE INFORMATION THERE IS. I HAVE OCCASIONALLY MET A FEW BENIGHTED INDIVIDUALS WHO HAVE ADMITTED THAT THEY POSSIBLY DID NOT KNOW WHAT A ROAD SHOULD BE CONSTRUCTED OF, BUT THEY KNEW EXACTLY WHOSE FARM THE ROAD OUGHT TO GO BY. AND THEN THERE ARE OTHER INDIVIDUALS IN A DIFFERENT LINE OF BUSINESS WHO ADMIT POSSIBLY THEY DO NOT KNOW WHERE THE ROAD OUGHT TO GO, BUT THEY KNOW WHAT IT OUGHT TO CONTAIN. AND SO, IN VIEW OF THE WIDESPREAD INFORMATION, BOTH AS TO THE WIDTH, DIRECTION, COMPOSITION, AND LOCATION, OF EVERY ROAD, THERE IS MIGHTY LITTLE TO BE SAID.

THE JOB OF AN ENGINEER, WHO, AFTER ALL, MUST SAY WHAT THE ROAD SHALL CONTAIN AND WHERE IT SHALL GO, IS SIMPLIFIED NO DOUBT BY THE MULTIPLICITY OF VIEWS WHICH HE IS ABLE TO GATHER UPON THE SUBJECT.

I AM GLAD TO WELCOME YOU TO MISSOURI, - NOT SO MUCH BECAUSE OF HER GREAT CITIES, NOT SO MUCH BECAUSE OF HER INDUSTRIES, NOT SO MUCH BECAUSE OF HER WEALTH OF FOREST AND FIELD AND MINE, BUT BECAUSE WE HOPE THAT OUT OF YOUR COMING WE MAY GET SOMETHING WHICH WILL BE OF BENEFIT TO US IN OUR ROAD PROGRAM.

MISSOURI HAS, AS YOU HAVE ALREADY BEEN INFORMED, A VERY AMBITIOUS ROAD PROGRAM, COVERING SOME 7,600 MILES OF THE STATE'S ROADS. THE PRESENT HIGHWAY COMMISSION HAS ALREADY LET CONTRACTS AMOUNTING TO 16 MILLIONS OF CONSTRUCTION UNDER THE FORMER LAW,



AND SOME 7 MILLIONS UNDER THE NEW 60 MILLION DOLLAR BOND ISSUE, WE HOPE WITHIN TWO YEARS TO BE ABLE TO CONNECT THE TWO GREAT CITIES OF THIS STATE WITH A ROAD OF WHICH WE MAY ALL BE PROUD, AND TO HAVE THE GRADING, THE DRAINAGE, AND THE BRIDGING OF THE REST OF THE STATE SYSTEM WELL UNDER WAY.

MISSOURI IS THE PIVOTAL STATE IN AMERICA. THERE ARE FIVE STATES EAST OF US, FIVE STATES WEST OF US, TWO STATES NORTH OF US, AND TWO STATES SOUTH OF US. WHETHER YOU LIKE IT OR NOT YOU ARE GOING TO HAVE TO COME AND SEE US. ROADS ARE GOING TO CROSS IN MISSOURI AND LEAD TO MISSOURI AS THEY FORMERLY LED TO ROME. WE WANT OUR PROGRAM TO BE A PART OF YOUR PROGRAM. WE WANT OUR SYSTEM TO DOVETAIL INTO YOUR SYSTEM. WE WANT OUR ROAD SYSTEM TO BE OF INTEREST AND OF SERVICE TO EVERY OTHER STATE IN THE UNION IN ORDER THAT IT MAY BE A PART OF A WELL-PLANNED SYSTEM THAT SHALL SERVE THE GREAT PEOPLE OF THE WHOLE COUNTRY.

I UNDERSTAND THAT THERE ARE PRESENT TODAY REPRESENTATIVES OF THE FEDERAL GOVERNMENT. IN VIEW OF THE FACT THAT THEY HAVE CONSIDERABLE AMOUNTS OF MONEY TO DONATE, THEY ARE NO DOUBT VERY POPULAR IN THIS ASSEMBLY. I WOULD BE GLAD TO TENDER YOU MY GOOD SERVICES EXCEPT FOR THE FACT THAT I HAVE NEITHER INFLUENCE WITH NOR VOICE IN THE FEDERAL GOVERNMENT OR THE MISSOURI STATE HIGHWAY COMMISSION. IF I COULD, I WOULD BE GLAD TO SERVE YOU. IT HAS BEEN SAID HERE, AND WELL SAID IN MY OPINION, THAT AFTER ALL THE VISION BACK OF THE ROAD BUILDING, BACK OF THE ROAD PROGRAM IS BROTHERHOOD. EVERYTHING WAITS UPON THE CONSTRUCTION OF ROADS. JUST AS SEVENTY-FIVE YEARS AGO THE DEVELOPMENT OF AMERICA WAS AT A STANDSTILL UNTIL THERE COULD BE DEVELOPED A GREAT SYSTEM OF TRANSPORTATION, JUST SO TODAY EVERY FORWARD MOVEMENT IN AMERICA DEPENDS UPON THE CONSTRUCTION OF GOOD ROADS. DO YOU ATTEMPT TO DEVELOP FURTHER THE AGRICULTURE OF THE NATION? THE PRIMARY PROBLEM IS THE REDUCTION OF THE MARKETING COST. DO YOU ATTEMPT TO SPREAD OUT THE FACTORIES OF AMERICA IN ORDER TO RELIEVE THE TENEMENT DISTRICTS, TO RELIEVE THE SOCIAL PROBLEMS OF THE CITY? THE FIRST CONSIDERATION IS TRANSPORTATION. WOULD YOU ATTEMPT TO BUILD UP THE RURAL SCHOOL, (AND AFTER ALL, MY FRIENDS, THAT IS ONE OF THE GREATEST PROBLEMS CONFRONTING AMERICA, BECAUSE THE SCHOOLS OF THE RURAL DISTRICTS DO NOT GIVE TO THE BOYS AND GIRLS OF THE FARM THE SAME OPPORTUNITY THAT THE CITY CHILDREN RECEIVE)? IF YOU WOULD ATTEMPT TO BUILD UP THE RURAL SCHOOL, THAT MOST INTENSELY AMERICAN INSTITUTION, THE FIRST CONSIDERATION IS A METHOD OF TRANSPORTATION AND OF ACCESSIBILITY TO THAT RURAL SCHOOL BY THE BOYS AND GIRLS OF THE FARM.



AND SO YOUR PROGRAM AND THE CONSTRUCTION IN WHICH YOU ARE INTERESTED IS THE PRIMARY FACTOR IN THE FURTHER DEVELOPMENT OF THAT GREAT BROTHERHOOD WHICH IS AMERICA. AMERICA OCCUPIES A PROUD AND A COMMANDING POSITION AMONG THE NATIONS OF THE WORLD. WE HERE IN AMERICA HAVE EVERYTHING THAT CAN BE DESIRED IN THE WAY OF PHYSICAL POSSESSION, MATERIAL PROSPERITY AND PHYSICAL AND MILITARY POWER. THE CORNUCOPIA OF PLENTY OVERFLOWS FOR AMERICA. WHETHER IT IS THE WEALTH OF MINERAL RESOURCES, OF FOREST RESOURCES, OF SOIL RESOURCES, AMERICA HAS THEM ALL ABUNDANTLY. EDUCATIONAL AND CULTURAL ADVANTAGES ABOUND. SCHOOLS AND COLLEGES DOT THE LANDSCAPE. STATELY CHURCHES REAR THEIR SPIRES IN EVERY HAMLET. HOMES LINE EVERY STREET AND EVERY THOROUGHFARE, AND THERE ARE, THANK GOD, FEW HOVELS IN AMERICA. THE FINANCIAL RESOURCES OF THE WORLD ARE OURS, AND IT IS NOT TOO MUCH TO SAY THAT THE CHANCELLORS OF THE OLD WORLD WAIT UPON THE FORMULATION OF A POLICY IN AMERICA. AND RIGHT NOW WE HAVE THE REMARKABLE SPECTACLE OF A LEADING STATESMAN OF A FOREIGN COUNTRY MAKING A PILGRIMAGE TO AMERICA MERELY TO TALK TO AMERICANS ABOUT INTERNATIONAL AFFAIRS. WITH ALL THESE RESOURCES, WITH ALL THE MATERIAL POWER, IT WOULD SEEM THAT PEACE AND HAPPINESS AND CONTENTMENT AND BROTHERHOOD WOULD REIGN IN AMERICA. DURING THE WAR DREAMERS AND VISIONARIES TOLD US THAT THE WAR WAS TO END WAR, THAT OUT OF THE FIERY CRUCIBLE OF WAR WAS TO EMERGE A NEW HUMAN-KIND, THAT THE DROSS WAS TO BE BURNED OUT OF HUMANITY LEAVING ONLY THE GOLD, THAT THE WAR WOULD END WAR AND THE IMPLEMENTS OF WAR WOULD BE BEATEN INTO THE IMPLEMENTS OF PEACE, AND THAT THE FIERY INTOLERANCE OF DESPOTISM AND THE THINGS THAT DIVIDE HUMANITY WOULD BE LAID DOWN AND ALL MANKIND WOULD UNITE IN THE JOYOUS SERVICE OF THE PRINCE OF PEACE.

THE WAR IS OVER. IN SPITE OF THE MATERIAL AND PHYSICAL POWER OF THIS COUNTRY WE CANNOT HONESTLY LOOK ABOUT US AND SAY THAT AMERICA IS AT PEACE, THAT WE HAVE CONTENTMENT. NATIONAL ANTAGONISM, RELIGIOUS HATRED, CLASS STRIFE, CLASS CONSCIOUSNESS, THESE ARE ALL TOO APPARENT IN AMERICA. BOLSHIEVISM, ANARCHISM, RADICALISM, THESE ARE NOT CONFINED TO RUSSIA AND THE OLD WORLD. WITH ALL THE POSSESSIONS OF PHYSICAL AND MATERIAL POWER, WITH THE TRAPPINGS OF POSSESSION AND OF WEALTH, AMERICA IS NOT HAPPY. THE SOLEMN TRUTH IS THAT THE MORAL ADVANCEMENT OF AMERICA HAS NOT KEPT PACE WITH THE PHYSICAL AND THE MATERIAL ADVANCEMENT OF AMERICA.

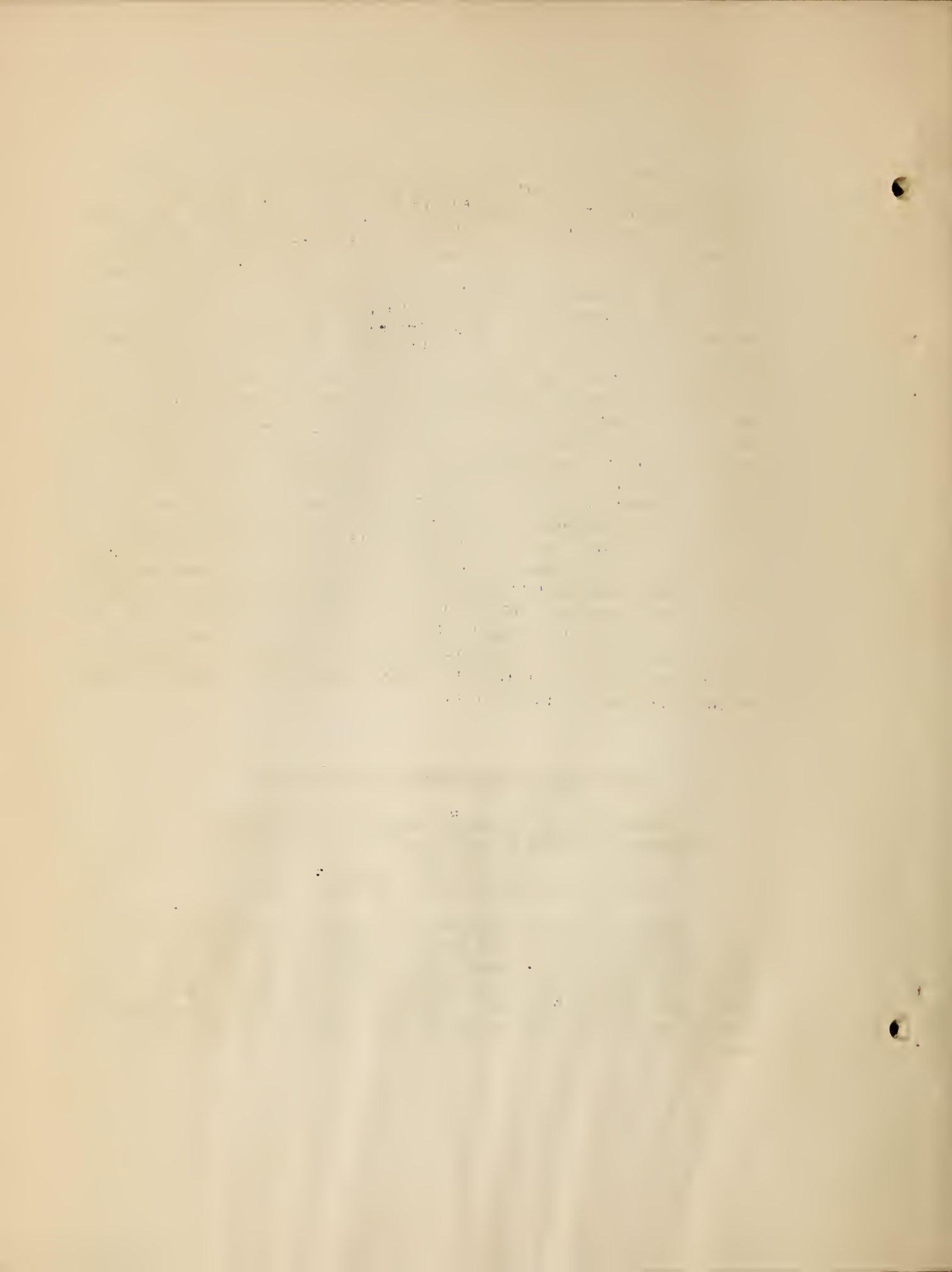


IT WAS AN ANCIENT DOCTRINE, - 140 YEARS OLD NOW, - WHICH LAID DOWN THIS PROPOSITION WHICH TO MY MIND IS THE GREATEST SINGLE STATEMENT OF STATESMANSHIP THAT I HAVE EVER SEEN. "RELIGION, MORALITY AND KNOWLEDGE ARE NECESSARY TO GOOD GOVERNMENT AND THE HAPPINESS OF MANKIND." RELIGION - THAT IS THE CHURCH. MORALITY - THAT IS THE HOME. KNOWLEDGE - THAT IS THE SCHOOL. THESE ARE THE THREE GREAT FUNDAMENTAL INSTITUTIONS OF AMERICA. IF THEY ARE THRIFTY AND PROSPEROUS AND EFFICIENT, AMERICA WILL BE THRIFTY AND PROSPEROUS AND EFFICIENT. AND THE BIGGEST PROBLEM THAT AMERICANS HAVE NOW OR EVER WILL HAVE, IN MY JUDGMENT, IS TO BRING BACK TO THE CHURCH ITS PRISTINE POWERS IN ALL OF THEIR HIGH AND LOFTY GRIP UPON SOCIETY, TO BRING BACK TO THE HOME THE MORALITY AND THE LAW, THE OBEDIENCE THAT IT ORIGINALLY HAD IN AMERICA, AND TO SEE TO IT THAT THE SCHOOL TEACHES NOT ONLY FACTS AND FIGURES BUT THOSE INFINITELY MORE IMPORTANT SPIRITUAL POWERS - SUCH THINGS AS AMBITION, SUCH THINGS AS VISION, HOPEFULNESS, THE DESIRE TO SERVE. WHETHER IT BE THE CHURCH WHICH YOU WOULD UPBUILD, OR THE HOME WHICH YOU PRESERVE, OR THE SCHOOL WHICH YOU WOULD MAKE MORE EFFICIENT, THE ROAD PROGRAM IN AMERICA IS THE VERY FIRST ESSENTIAL IN KNITTING MEN TOGETHER, IN UNITING AMERICANS IN A COMMON PATRIOTISM, A COMMON COMMUNITY INTEREST, AND A COMMON DESIRE FOR THE SERVICE OF THAT GREAT BROTHERHOOD WHICH AFTER ALL IS AMERICA. AND SO I AM GLAD TO WELCOME YOU HERE NOT ONLY FOR WHAT YOU STAND IN A MATERIAL WAY, NOT ONLY ON ACCOUNT OF WHAT YOU EXPECT TO ACCOMPLISH, BUT FOR THE GREAT VISION AND THE GREAT PURPOSE THAT THERE IS BEHIND THE ROAD PROGRAM IN AMERICA.

#### RHODE ISLAND MOTOR-VEHICLE ACCIDENT-DATA

ABSTRACTED FROM A REPORT MADE BY H. C. BURNHAM,  
RESEARCH DIRECTOR OF THE MOTOR VEHICLE DEPARTMENT  
OF THE  
RHODE ISLAND STATE BOARD OF PUBLIC WORKS

A SUMMARY OF THE MOTOR-VEHICLE ACCIDENT STATISTICS, FOR THE ROADS AND STREETS OF THE STATE, COVERING A PERIOD OF ONE YEAR FROM JANUARY 1 TO DECEMBER 31, 1928, HAS BEEN RELEASED RECENTLY BY THE MOTOR VEHICLE DEPARTMENT OF THE RHODE ISLAND STATE BOARD OF PUBLIC ROADS. THE DATA, WHICH INCLUDE ONLY THOSE MISHAPS INVOLVING INJURY OR DEATH, ARE GIVEN IN THE FOLLOWING TABLES:



# STATE OF RHODE ISLAND

## STATE BOARD OF PUBLIC ROADS.

ABRAHAM L. ATWOOD, Chairman  
JOHN W. HANLEY, Secretary  
FREDERICK A. H. BODINGTON, Secretary  
GEORGE R. WELLINGTON, Clerk



# MOTOR VEHICLE DEPARTMENT

GEORGE R. WELLINGTON, Chief Clerk  
HARRY C. BURNHAM, Sergeant

## ANALYSIS SUMMARY OF MOTOR VEHICLE ACCIDENTS INVOLVING INJURY OR DEATH FOR A PERIOD OF One Year

from January 1, 1928 to December 31, 1928

FORM 8-28-4

| TYPE OF ACCIDENT                    | Total Acc'ts | Total       |            | AGES OF PERSONS KILLED |           |           |           |           |         |  | AGES OF PERSONS INJURED |            |            |             |             |            |          |
|-------------------------------------|--------------|-------------|------------|------------------------|-----------|-----------|-----------|-----------|---------|--|-------------------------|------------|------------|-------------|-------------|------------|----------|
|                                     |              |             |            | all ages               |           |           |           |           |         |  | Total all ages          |            |            |             |             |            |          |
|                                     |              | FATAL       | NON-FATAL  | 1-6                    | 7-15      | 16-35     | 36-60     | Over 61   | Unknown |  | 1-6                     | 7-15       | 16-35      | 36-60       | Over 61     | Unknown    |          |
| Motor vehicle - Collision           | 1277         | 2318        | 20         |                        | 2         | 10        | 5         | 3         |         |  | 2298                    | 123        | 135        | 1308        | 619         | 112        | 1        |
| Motor vehicle - Pedestrian          | 2412         | 2476        | 90         | 21                     | 18        | 5         | 18        | 28        |         |  | 2386                    | 564        | 616        | 528         | 502         | 176        |          |
| Motor vehicle - Bicycle             | 146          | 156         | 1          |                        | 1         |           |           |           |         |  | 155                     | 3          | 108        | 32          | 10          | 2          |          |
| Motor vehicle - Trolley             | 106          | 165         | 3          |                        |           | 3         |           |           |         |  | 162                     | 6          | 4          | 88          | 54          | 10         |          |
| Motor vehicle - Wagon               | 59           | 75          |            |                        |           |           |           |           |         |  | 75                      | 1          | 6          | 40          | 20          | 8          |          |
| Motor vehicle - R. R. Train         | 15           | 25          | 4          |                        |           | 2         | 1         | 1         |         |  | 21                      | 1          | 1          | 10          | 7           | 2          |          |
| Motor vehicle - Sled or scooter     | 42           | 45          | 2          | 2                      |           |           |           |           |         |  | 43                      | 13         | 28         | 2           |             |            |          |
| Motor vehicle - Overturned          | 77           | 179         | 3          |                        |           | 1         | 2         |           |         |  | 176                     | 4          | 19         | 88          | 59          | 5          | 1        |
| Motor vehicle - Stationary object   | 232          | 438         | 17         |                        | 1         | 12        | 4         |           |         |  | 421                     | 10         | 21         | 258         | 116         | 13         | 3        |
| Motor vehicle - Road obstruction    | 97           | 138         | 2          |                        |           | 2         |           |           |         |  | 136                     | 6          | 11         | 83          | 28          | 8          |          |
| Motor vehicle - Occupant falls from | 50           | 52          | 2          |                        |           | 2         |           |           |         |  | 50                      | 10         | 19         | 16          | 5           |            |          |
| Motor vehicle - Runaway             | 13           | 15          | 1          |                        |           |           | 1         |           |         |  | 14                      | 2          | 1          | 6           | 4           | 1          |          |
| <b>1556 TOTAL</b>                   | <b>4526</b>  | <b>6082</b> | <b>145</b> | <b>23</b>              | <b>22</b> | <b>37</b> | <b>31</b> | <b>32</b> |         |  | <b>5937</b>             | <b>743</b> | <b>969</b> | <b>2459</b> | <b>1424</b> | <b>337</b> | <b>5</b> |

| PROBABLE FAULT - MOTORIST                       |       |           |      | PROBABLE FAULT-PEDESTRIAN |       |           |  | PROBABLE FAULT - MISC. |       |           |  | TOTAL |       | NON-FATAL |  |
|---|-------|-----------|------|---------------------------|-------|-----------|--|------------------------|-------|-----------|--|-------|-------|-----------|--|
| TOTAL   | FATAL | NON-FATAL |      | TOTAL                     | FATAL | NON-FATAL |  | TOTAL                  | FATAL | NON-FATAL |  | TOTAL | FATAL | NON-FATAL |  |
| Too fast at intersecting street                 | 749   | 13        | 736  |                           |       |           |  | 355                    | 1     | 354       |  | 14    |       | 14        |  |
| Too fast for condition or course of road        | 653   | 34        | 619  |                           |       |           |  | 528                    | 5     | 523       |  | 102   | 1     | 101       |  |
| Overtaking & passing with approaching traffic   | 69    | 2         | 67   |                           |       |           |  |                        |       |           |  | 29    | 1     | 28        |  |
| On wrong side of road                           | 71    | 3         | 68   |                           |       |           |  | 357                    | 7     | 350       |  | 44    | 1     | 43        |  |
| Inattention                                     | 441   | 34        | 407  |                           |       |           |  | 20                     | 1     | 19        |  |       |       |           |  |
| Improper turning                                | 148   | 2         | 146  |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Lack of caution-approaching pedestrian in road  | 687   | 22        | 665  |                           |       |           |  | 5                      |       | 5         |  |       | 3     | 186       |  |
| Insufficient light                              | 17    | 1         | 16   |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Inexperience                                    | 28    |           | 28   |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Intoxicated                                     | 82    | 7         | 75   |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Defective motor vehicle                         | 28    | 1         | 27   |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Vision obscured-side curtains-coated windshield | 5     |           | 5    |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Careless backing                                | 85    | 2         | 83   |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Passing left of trolley                         |       |           |      |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Cranking in gear                                | 6     | 1         | 5    |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Passenger interfering with operator             | 2     |           | 2    |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Disabled operator                               | 1     |           | 1    |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Unknown operator left scene of accident         |       |           |      |                           |       |           |  |                        |       |           |  |       |       |           |  |
| Unknown cause                                   |       |           |      |                           |       |           |  |                        |       |           |  |       |       |           |  |
| TOTAL   | 3072  | 122       | 2950 |                           |       |           |  | 6082                   | 145   | 5937      |  | 6082  | 145   | 5937      |  |

### LOCATION OF INJURED

| LOCATION OF INJURED               | TOTAL       | FATAL      | NON-FATAL   |
|-----------------------------------|-------------|------------|-------------|
| In street                         | 2517        | 90         | 2427        |
| Occupant of motor vehicle         | 2259        | 34         | 2225        |
| Operator of motor vehicle         | 944         | 15         | 929         |
| Boarding or leaving motor vehicle | 4           | 2          | 2           |
| Boarding or leaving trolley car   | 5           |            | 5           |
| Working on road                   | 6           |            | 6           |
| On sidewalk or safety-isle        | 51          | 1          | 50          |
| Stealing ride                     | 7           |            | 7           |
| Riding bicycle                    | 147         | 1          | 146         |
| Occupant of other vehicle         | 103         |            | 103         |
| On sled or scooter                | 39          | 2          | 37          |
| <b>TOTAL</b>                      | <b>6082</b> | <b>145</b> | <b>5937</b> |



STATE OF RHODE ISLAND  
STATE BOARD OF PUBLIC ROADS.

ABRAM L. ATWOOD, Chairman  
JOHN W. HANLEY  
BENJAMIN F. ROBINSON, Secretary  
JOSEPH P. BURLINGAME  
FREDERICK A. H. BODINGTON  
GEORGE R. WELLINGTON, Clerk



**MOTOR VEHICLE DEPARTMENT**  
GEORGE R. WELLINGTON, Chief Clerk  
HARRY C. BURNHAM, Stenographer

**ANALYSIS SUMMARY OF MOTOR VEHICLE  
ACCIDENTS INVOLVING INJURY OR DEATH**

FOR A PERIOD OF One Year  
from January 1, 1928 to December 31, 1928

HARRY C. BURNHAM, *Superintendent*

GEORGE R. WELLINGTON, Chief Clerk



FORM 8-20-11

| FORM 9-20-B          |       |       |           |                    |  | LOCATION - Cities or towns |       |       |           | LOCATION - Cities or towns |  |  |       | LOCATION - Cities or towns |           |       |      |
|----------------------|-------|-------|-----------|--------------------|--|----------------------------|-------|-------|-----------|----------------------------|--|--|-------|----------------------------|-----------|-------|------|
|                      | TOTAL | FATAL | NON-FATAL |                    |  |                            | TOTAL | FATAL | NON-FATAL |                            |  |  | TOTAL | FATAL                      | NON-FATAL |       |      |
| 267.9 Providence     | 2216  | 40    | 2176      | 9.4 Burrillville   |  |                            | 30    | 1     | 29        | 1.7 Richmond               |  |  | 14    |                            |           |       | 14   |
| 26.0 East Providence | 168   | 8     | 160       | 1.6 Glocester      |  |                            | 12    | 1     | 11        | 2.7 Hopkinton              |  |  | 32    | 2                          |           |       | 30   |
| 69.7 Pawtucket       | 447   | 13    | 434       | 1.0 Foster         |  |                            | 7     | 1     | 6         | 11.1 Westerly              |  |  | 71    |                            |           |       | 71   |
| 25.4 Central Falls   | 129   | 7     | 122       | 3.3 Scituate       |  |                            | 21    | 1     | 20        | 1.1 Charlestown            |  |  | 6     | 1                          |           |       | 5    |
| 49.6 Woonsocket      | 212   | 5     | 207       | 18.2 Warwick       |  |                            | 170   | 5     | 165       | 6.0 South Kingstown        |  |  | 30    |                            |           |       | 30   |
| 27.7 Newport         | 103   | 3     | 100       | 18.2 West Warwick  |  |                            | 89    | 6     | 83        | 4.3 North Kingstown        |  |  | 47    | 3                          |           |       | 44   |
| 34.4 Cranston        | 185   | 12    | 173       | 4.1 East Greenwich |  |                            | 15    |       | 15        | 1.3 Narragansett           |  |  | 10    |                            |           |       | 10   |
| 8.6 Johnston         | 40    | 2     | 38        | 7.9 Warren         |  |                            | 36    | 1     | 35        | 1.7 Jamestown (island)     |  |  | 3     |                            |           |       | 3    |
| 10.2 Cumberland      | 56    | 3     | 53        | 4.9 Barrington     |  |                            | 33    | 2     | 31        | 1.0 New Shoreham (island)  |  |  | 1     |                            |           |       | 1    |
| 10.5 Lincoln         | 59    | 4     | 55        | 12.7 Bristol       |  |                            | 39    | 2     | 37        | 2.7 Portsmouth             |  |  | 32    | 2                          |           |       | 30   |
| 9.0 North Providence | 58    | 4     | 54        | 6.3 Coventry       |  |                            | 34    | 4     | 30        | 4.5 Tiverton               |  |  | 19    | 2                          |           |       | 17   |
| 3.9 Smithfield       | 27    | 1     | 26        | 1.1 Exeter         |  |                            | 9     |       | 9         | 1.3 Little Compton         |  |  | 1     |                            |           |       | 1    |
| 3.5 North Smithfield | 34    | 1     | 33        | .4 West Greenwich  |  |                            | 11    | 2     | 9         | 2.2 Middletown             |  |  | 20    |                            |           |       | 20   |
|                      |       |       |           |                    |  |                            |       |       |           |                            |  |  | 4526  | 139                        |           | TOTAL | 4587 |

**Note** Figures prefixed to name of city or town denote thousands population.

**Note:** Figures prefixed to name of city or town denote thousands population.

Note: Figures prefixed to name of city or town denote thousands population.

| LOCALITY                  | TOTAL | FATAL | NON-FATAL | ROAD SURFACE | TOTAL | FATAL | NON-FATAL | WEATHER       | TOTAL | FATAL | NON-FATAL |
|---------------------------|-------|-------|-----------|--------------|-------|-------|-----------|---------------|-------|-------|-----------|
| Business district         | 514   | 4     | 510       | Good         | 3194  | 101   | 3093      | Clear         | 3623  | 109   | 3514      |
| Residential congested     | 3088  | 83    | 3005      | Rough        | 236   | 5     | 231       | Rainy         | 727   | 25    | 702       |
| Residential not congested | 464   | 18    | 446       | Rutty        | 13    |       | 13        | Snowy         | 68    | 1     | 67        |
| School                    | 22    | 1     | 21        | Sandy        | 15    |       | 15        | Foggy         | 108   | 4     | 104       |
| Rural                     | 438   | 33    | 405       | Wet          | 889   | 28    | 861       | Unknown       |       |       |           |
| Unknown                   |       |       |           | Icy          | 95    | 4     | 91        |               |       |       |           |
| TOTAL                     | 4526  | 139   | 4387      | Snowy        | 84    | 1     | 83        | TOTAL         | 4526  | 139   | 4387      |
|                           |       |       |           | Unknown      |       |       |           |               |       |       |           |
| COURSE OF ROAD            | TOTAL | FATAL | NON-FATAL | TOTAL        |       |       |           | PERIOD OF DAY | TOTAL | FATAL | NON-FATAL |
| Straight                  | 1591  | 70    | 1521      |              | 4526  | 139   | 4387      | Daylight      | 2958  | 77    | 2881      |
| Curve                     | 188   | 17    | 171       | TRAFFIC      |       |       |           | Dusk          |       |       |           |
| Intersection              | 2561  | 42    | 2519      | None         | 1363  | 65    | 1318      | Night         | 1568  | 62    | 1506      |
| Fork                      | 152   | 3     | 149       | Light        | 2112  | 54    | 2058      | Unknown       |       |       |           |
| Ascent                    | 2     |       | 2         | Heavy        | 776   | 12    | 764       | TOTAL         | 4526  | 139   | 4387      |
| Descent                   | 12    | 1     | 11        | Parked cars  | 255   | 8     | 247       |               |       |       |           |
| R. R. Crossing            | 20    | 6     | 14        | Unknown      |       |       |           | STREET LIGHTS |       |       |           |
|                           |       |       |           |              |       |       |           | Lighted       | 1352  | 43    | 1309      |
|                           |       |       |           | TOTAL        | 4526  | 139   | 4387      | None          | 200   | 18    | 182       |
| Unknown                   |       |       |           |              |       |       |           | Lights out    | 16    | 1     | 15        |
| TOTAL                     | 4526  | 139   | 4387      |              |       |       |           | Unknown       |       |       |           |



# STATE OF RHODE ISLAND

## STATE BOARD OF PUBLIC ROADS.

ABRAHAM L. ATWOOD, Chairman  
JOHN W. HANLEY, Secretary  
BENJAMIN F. ROBINSON, Secretary  
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GEORGE R. WELLINGTON, Clerk



# MOTOR VEHICLE DEPARTMENT

GEORGE R. WELLINGTON, Chief Clerk  
HARRY C. BURNHAM, Secretary

## ANALYSIS SUMMARY OF MOTOR VEHICLE ACCIDENTS INVOLVING INJURY OR DEATH

FOR A PERIOD OF  
One Year  
from JANUARY 1, 1928 to DECEMBER 31, 1928

JOHN B. 26-C

| DAY OF WEEK                        | TOTAL | FATAL | NON-FATAL | TYPES OF VEHICLES         | TOTAL | FATAL | NON-FATAL | SEX OF OPERATOR                       | TOTAL | FATAL | NON-FATAL |
|------------------------------------|-------|-------|-----------|---------------------------|-------|-------|-----------|---------------------------------------|-------|-------|-----------|
| Sunday                             | 675   | 21    | 654       | Passenger                 | 4651  | 110   | 4541      | Male                                  | 5398  | 144   | 5254      |
| Monday                             | 614   | 19    | 595       | Truck                     | 813   | 34    | 779       | Female                                | 354   | 5     | 349       |
| Tuesday                            | 591   | 13    | 578       | Taxi                      | 69    | 2     | 67        | Unknown                               | 94    | 8     | 86        |
| Wednesday                          | 569   | 14    | 555       | Jitney                    | 61    |       | 61        |                                       | 5846  | 157   | 5689      |
| Thursday                           | 617   | 18    | 599       | Rental                    | 71    | 3     | 68        |                                       |       |       |           |
| Friday                             | 662   | 28    | 634       | Motorcycle                | 115   | 3     | 112       | OPERATOR'S LICENSE                    |       |       |           |
| Saturday                           | 798   | 26    | 772       | Dealer                    | 24    | 1     | 23        | Rhode Island                          | 4956  | 116   | 4840      |
| TOTAL                              | 4526  | 139   | 4387      | Unknown                   | 42    | 4     | 38        | Rhode Island special                  | 167   | 7     | 160       |
|                                    |       |       |           | TOTAL                     | 5846  | 157   | 5689      | No license                            | 45    | 5     | 40        |
| TIME OF DAY                        | TOTAL | FATAL | NON-FATAL | CONDITION OF VEHICLES     | TOTAL | FATAL | NON-FATAL | Unlicensed - supervision licensed opr | 52    |       | 52        |
| 12 - 1 a. m.                       | 73    | 9     | 64        | Apparently good           | 5489  | 137   | 5352      | Out of state operator                 | 566   | 22    | 544       |
| 1 - 6 a. m.                        | 109   | 7     | 102       | Defective brakes          | 23    | 8     | 15        | Unknown                               | 60    | 7     | 53        |
| 6 - 7 a. m.                        | 88    | 4     | 84        | Defective steering gear   | 18    |       | 18        | TOTAL                                 | 5846  | 157   | 5689      |
| 7 - 8 a. m.                        | 99    | 1     | 98        | Other defective equipment | 18    | 2     | 16        | AGE OF OPERATOR                       |       |       |           |
| 8 - 9 a. m.                        | 149   | 3     | 146       | No chains - slippery road | 14    | 1     | 13        | 16 - 20 years                         | 841   | 26    | 815       |
| 9 - 10 a. m.                       | 119   | 1     | 118       | Insufficient light        | 234   | 5     | 229       | 21 - 35 years                         | 2971  | 87    | 2884      |
| 10 - 11 a. m.                      | 181   | 7     | 174       | No lights                 | 1     |       | 1         | 36 - 60 years                         | 1761  | 31    | 1730      |
| 11 - 12 a. m.                      | 209   | 6     | 203       | Unknown                   | 49    | 4     | 45        | Over 60 years                         | 116   | 5     | 111       |
| 12 - 1 p. m.                       | 308   | 7     | 301       | TOTAL                     | 5846  | 157   | 5689      | Unknown                               | 157   | 8     | 149       |
| 1 - 2 p. m.                        | 237   | 9     | 228       | USE OF VEHICLE            |       |       |           | TOTAL                                 | 5846  | 157   | 5689      |
| 2 - 3 p. m.                        | 235   | 8     | 227       | Business                  | 2005  | 59    | 1946      | OPERATOR'S EXPERIENCE                 |       |       |           |
| 3 - 4 p. m.                        | 269   | 4     | 265       | Pleasure                  | 3558  | 89    | 3569      | 0 - 3 months                          | 315   | 12    | 303       |
| 4 - 5 p. m.                        | 406   | 15    | 391       | For hire                  | 141   | 5     | 136       | 3 - 6 months                          | 110   | 4     | 106       |
| 5 - 6 p. m.                        | 525   | 16    | 509       | Unknown                   | 42    | 4     | 38        | 6 - 12 months                         | 274   | 7     | 267       |
| 6 - 7 p. m.                        | 316   | 9     | 307       | TOTAL                     | 5846  | 157   | 5689      | 1 - 2 years                           | 662   | 20    | 642       |
| 7 - 8 p. m.                        | 354   | 7     | 347       | OPERATED BY               |       |       |           | 2 - 5 years                           | 1634  | 50    | 1584      |
| 8 - 9 p. m.                        | 296   | 9     | 287       | Owner                     | 3507  | 76    | 3431      | Over 5 years                          | 2669  | 51    | 2618      |
| 9 - 10 p. m.                       | 221   | 4     | 217       | Employee                  | 1056  | 37    | 1019      | Unknown                               | 182   | 13    | 169       |
| 10 - 11 p. m.                      | 190   | 7     | 183       | Friend of owner           | 1160  | 36    | 1124      | TOTAL                                 | 5846  | 157   | 5689      |
| 11 - 12 p. m.                      | 142   | 6     | 136       | Learner                   | 36    |       | 36        | State road rural                      | 589   | 29    | 560       |
| TOTAL                              | 4526  | 139   | 4387      | Unknown                   | 87    | 8     | 79        | State rd res not cong.                | 243   | 9     | 234       |
| Unknown opr. left scene not ident. | 82    | 8     | 74        | TOTAL                     | 5846  | 157   | 5689      | State rd res cong.                    | 139   | 9     | 130       |
| Opr. left scene                    |       |       |           |                           |       |       |           | Total                                 | 771   | 47    | 724       |
| later apprehended                  | 22    | 9     | 13        |                           |       |       |           |                                       |       |       |           |



# SPEED DATA

IN ADDITION TO THE INFORMATION GIVEN ABOVE FOR THE YEAR 1928, THE REPORT INCLUDES A SUMMARY OF OBSERVATIONS WITH REGARD TO SPEED AND GENERAL OPERATING CONDITIONS OF MOTOR VEHICLES COVERING THE  $3\frac{1}{2}$ -YEAR PERIOD FROM MAY, 1925 TO DECEMBER, 1928. THE SPEEDS WERE DETERMINED AT A NUMBER OF OBSERVATION STATIONS SCATTERED THROUGHOUT THE STATE. DURING THE  $3\frac{1}{2}$ -YEAR PERIOD, OBSERVATIONS WERE MADE ON 33,643 PASSENGER VEHICLES, 11,492 TRUCKS, AND 726 BUSES.

THE GRADUAL INCREASE IN THE MEAN AVERAGE SPEED, WHICH IS ATTRIBUTED PRINCIPALLY TO IMPROVED MOTOR VEHICLE DESIGN AND CONSTRUCTION, IS INDICATED IN TABLE I. THIS TABLE ALSO SHOWS THE SPEED FOR CERTAIN SPECIFIC CONDITIONS. THE REPORT CONCLUDES THAT THE INCREASE IN SPEED HAS CAUSED AN INCREASE IN THE NUMBER AND SEVERITY OF MOTOR-VEHICLE ACCIDENTS.

TABLE I.- INCREASE IN MEAN AVERAGE SPEED OVER  $3\frac{1}{2}$ -YEAR PERIOD FROM 1925-1928 AND SPEEDS UNDER CERTAIN SPECIFIC CONDITIONS.

| YEAR : | MONTH                    | SPEED IN MILES PER HOUR |         |         |
|--------|--------------------------|-------------------------|---------|---------|
|        |                          | MEAN AVERAGE            | MAXIMUM | MINIMUM |
| 1925 : | MAY, JUNE, AND JULY      | 19.1                    | 57      | 12      |
| 1926 : | APRIL, MAY, AND JUNE     | 21.7                    | 53      | 11      |
| 1927 : | Do Do Do                 | 24.3                    | 68      | 14      |
| 1928 : | Do Do Do                 | 27.3                    | 75      | 17      |
| 1925 : | OCTOBER AND NOVEMBER     | 25.6                    | 61      | 14      |
| 1926 : | Do Do Do                 | 29.2                    | 55      | 13      |
| 1927 : | Do Do Do                 | 31.4                    | 71      | 16      |
| 1928 : | Do Do Do                 | 35.1                    | 81      | 14      |
| 1925-: |                          |                         |         |         |
| 1928:  | AT INTERSECTING STREETS  | 23.6                    | 42      | 12      |
| 1925-: |                          |                         |         |         |
| 1928:  | AT CURVES OR WHERE VIEW  |                         |         |         |
|        | : IS SO OBSTRUCTED THAT  |                         |         |         |
|        | : NECESSITY FOR SLOWING  |                         |         |         |
|        | : DOWN IS SELF EVIDENT   | 29.4                    | 48      | 11      |
| 1925-: |                          |                         |         |         |
| 1928:  | IN FOG, HEAVY RAIN, OR   |                         |         |         |
|        | : SNOW STORM             | 24.7                    | 49      | 7       |
| 1925-: |                          |                         |         |         |
| 1928:  | WHERE DRIVER IS INATTEN- |                         |         |         |
|        | : TIVE TO OPERATION OF   |                         |         |         |
|        | : VEHICLE                | 23.2                    | 36      | 11      |

1. The first part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for the proper management of the company's finances and for ensuring that all stakeholders are kept informed of the company's financial health.

2. The second part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for the proper management of the company's finances and for ensuring that all stakeholders are kept informed of the company's financial health.

3. The third part of the paper discusses the importance of maintaining accurate records of all transactions. It emphasizes that this is essential for the proper management of the company's finances and for ensuring that all stakeholders are kept informed of the company's financial health.

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UNITED STATES DEPARTMENT OF AGRICULTURE  
BUREAU OF PUBLIC ROADS

CURRENT CONDITION OF FEDERAL AID ROAD WORK

AS OF FEBRUARY 28, 1929

| STATE          | BALANCE OF FEDERAL AID AVAILABLE FOR NEW PROJECTS | P. B. & E. RECOMMENDED FOR APPROVAL |                 |       |                      |                 |       | PROJECT AGREEMENTS EXECUTED |                 |       |                      |                 |       | PAID TO STATES DURING FISCAL YEAR | STATE          |
|----------------|---|-------------------------------------|-----------------|-------|----------------------|-----------------|-------|-----------------------------|-----------------|-------|----------------------|-----------------|-------|-----------------------------------|----------------|
|                |   | NOT YET UNDER CONSTRUCTION          |                 |       | UNDER CONSTRUCTION   |                 |       | NOT YET UNDER CONSTRUCTION  |                 |       | UNDER CONSTRUCTION   |                 |       |                                   |                |
|                |   | FEDERAL AID ALLOTTED                | MILEAGE INITIAL | STAGE | FEDERAL AID ALLOTTED | MILEAGE INITIAL | STAGE | FEDERAL AID ALLOTTED        | MILEAGE INITIAL | STAGE | FEDERAL AID ALLOTTED | MILEAGE INITIAL | STAGE |                                   |                |
| ALABAMA        | 2,549,238.33                                      | 164,289.63                          | 6.4             | 21.1  | 303,795.37           | 23.5            | 0.1   | 1,518,347.81                | 222.9           | 12.3  | 1,623,659.28         | 162.8           | 31.2  | 1,447,545.59                      | ALABAMA        |
| ARIZONA        | 3,070,427.47                                      | 162,393.47                          | 23.6            |       | 6,531.39             |                 |       | 1,161,387.69                | 49.7            | 12.3  | 387,195.01           | 56.9            | 1.5   | 1,100,684.87                      | ARIZONA        |
| ARKANSAS       | 3,054,379.01                                      |                                     |                 |       |                      |                 |       | 1,346,226.15                | 91.7            | 6.5   | 979,103.60           | 69.8            |       | 835,309.09                        | ARKANSAS       |
| CALIFORNIA     | 2,551,103.73                                      | 97,031.55                           | 3.1             | 5.8   | 614,430.97           | 21.6            | 9.3   | 4,415,471.71                | 255.5           | 7.3   | 3,359,401.64         | 77.8            |       | 1,617,274.90                      | CALIFORNIA     |
| COLORADO       | 2,948,124.20                                      | 136,996.16                          | 13.8            |       | 397,013.34           | 32.8            | .5    | 1,198,824.57                | 113.9           | 16.3  | 1,003,053.29         | 41.4            | 16.7  | 1,418,205.35                      | COLORADO       |
| CONNECTICUT    | 944,972.54  | 232,100.09                          | .9              |       |                      |                 |       | 272,216.34                  | 13.0            |       | 509,371.76           | 18.3            |       | 1,002,184.87                      | CONNECTICUT    |
| DELAWARE       | 305,511.22  | 154,379.50                          | 7.7             |       | 59,411.50            |                 |       | 68,138.05                   | 8.0             |       | 152,611.78           | 7.7             | 3.9   | 97,531.20                         | DELAWARE       |
| FLORIDA        | 2,047,979.95                                      | 30,916.76                           | .4              |       | 30,916.76            |                 |       | 1,232,877.16                | 110.7           | 5.5   | 158,266.95           | .1              |       | 652,072.00                        | FLORIDA        |
| GEORGIA        | 2,006,031.43                                      | 4,943.09                            |                 |       |                      |                 |       | 2,091,623.65                | 202.5           | 46.5  | 549,092.04           | 59.0            | 10.0  | 1,239,709.88                      | GEORGIA        |
| IDAHO          | 1,009,127.91                                      | 29,816.95                           | 3.7             |       | 12,000.00            | .1              |       | 822,332.77                  | 112.5           | 3.0   | 573,117.33           | 50.8            | 40.2  | 1,139,177.51                      | IDAHO          |
| ILLINOIS       | 2,943,225.56                                      | 523,777.59                          | 39.3            |       | 205,943.55           | 7.5             |       | 8,724,288.81                | 596.4           |       | 2,509,034.67         | 167.1           |       | 3,965,493.14                      | ILLINOIS       |
| INDIANA        | 1,147,597.72                                      | 941,524.89                          | 55.6            |       |                      |                 |       | 2,780,546.70                | 174.1           | 3.5   | 2,110,834.70         | 139.7           |       | 2,311,709.99                      | INDIANA        |
| IOWA           | 2,080,799.59                                      | 150,000.00                          | 10.9            |       | 68,556.53            | 12.5            |       | 995,793.49                  | 41.8            | 90.8  | 1,554,427.43         | 40.2            | 77.7  | 1,228,753.52                      | IOWA           |
| KANSAS         | 2,176,408.98                                      | 354,990.53                          | 54.3            |       | 284,208.52           | 28.0            |       | 2,229,431.10                | 351.7           | 11.2  | 1,215,755.29         | 145.2           | 10.9  | 1,558,238.45                      | KANSAS         |
| KENTUCKY       | 925,237.45  |                                     |                 |       |                      |                 |       | 1,877,901.50                | 193.7           |       | 1,424,331.79         | 116.2           |       | 1,055,025.69                      | KENTUCKY       |
| LOUISIANA      | 1,203,402.35                                      | 25,000.00                           | .1              |       | 367,357.85           |                 |       | 1,766,979.67                | 167.1           |       | 350,925.73           | 38.9            |       | 577,983.00                        | LOUISIANA      |
| MAINE          | 1,439,377.47                                      |                                     |                 |       | 19,161.14            | 2.2             |       | 577,297.43                  | 38.7            |       | 614,950.43           | 47.0            |       | 194,536.70                        | MAINE          |
| MARYLAND       | 695,655.03  |                                     |                 |       |                      |                 |       | 194,190.00                  | 13.7            |       | 396,190.00           | 35.9            |       | 439,522.39                        | MARYLAND       |
| MASSACHUSETTS  | 2,155,467.10                                      | 82,770.63                           | .6              |       | 280,850.00           | 12.5            |       | 989,072.70                  | 58.1            |       | 1,240,597.91         | 78.0            | .3    | 447,873.90                        | MASSACHUSETTS  |
| MICHIGAN       | 2,187,876.01                                      | 273,541.86                          | 14.6            |       | 6.5                  |                 |       | 4,378,666.11                | 252.0           |       | 1,377,418.90         | 80.5            |       | 3,020,675.95                      | MICHIGAN       |
| MINNESOTA      | 2,147,297.96                                      |                                     |                 |       |                      |                 |       | 350,618.27                  | 96.1            | 11.2  |                      |                 |       | 2,194,328.05                      | MINNESOTA      |
| MISSISSIPPI    | 1,422,774.43                                      | 137,590.43                          | 24.9            |       | 347,585.35           | 15.2            | .9    | 1,338,445.83                | 212.8           | 21.1  | 320,950.68           | 14.2            | 19.5  | 1,057,518.33                      | MISSISSIPPI    |
| MISSOURI       | 1,813,915.42                                      | 242,915.42                          | 20.2            |       | 213,449.89           |                 |       | 2,869,869.76                | 187.7           | 35.9  | 831,588.22           | 25.3            | 23.7  | 1,814,635.11                      | MISSOURI       |
| MONTANA        | 4,955,576.36                                      | 7,903.81                            |                 |       | 489,976.55           | 7.6             |       | 1,917,351.04                | 225.1           | 7.4   | 1,188,078.01         | 135.1           | 6.0   | 1,384,635.11                      | MONTANA        |
| NEBRASKA       | 3,258,307.38                                      | 272,420.62                          | 23.1            | 29.7  | 113,130.97           | 12.2            | .9    | 1,380,194.82                | 278.5           | 105.1 | 896,854.30           | 167.9           | 5.8   | 1,013,284.41                      | NEBRASKA       |
| NEVADA         | 979,108.31  | 53,475.34                           |                 | 25.8  | 84,497.48            | 8.5             | 7.4   | 1,671,309.63                | 125.8           | 70.1  | 701,423.65           | 77.2            | 65.6  | 607,848.35                        | NEVADA         |
| NEW HAMPSHIRE  | 403,275.47  |                                     |                 |       |                      |                 |       | 108,513.31                  | 7.5             |       | 254,085.52           | 17.1            |       | 303,629.00                        | NEW HAMPSHIRE  |
| NEW JERSEY     | 892,185.94  | 53,565.00                           | 3.6             |       | 115,893.30           | 9.9             |       | 786,255.00                  | 52.4            |       | 338,127.35           | 22.9            | 4     | 389,554.23                        | NEW JERSEY     |
| NEW MEXICO     | 1,087,154.11                                      | 235,198.30                          | 13.0            |       |                      |                 |       | 1,671,309.63                | 188.5           | 5.1   | 559,442.55           | 29.6            | 8.6   | 1,554,254.03                      | NEW MEXICO     |
| NEW YORK       | 6,574,580.12                                      | 408,600.00                          | 27.3            |       |                      |                 |       | 4,958,700.55                | 331.8           |       | 4,237,615.34         | 257.8           |       | 2,785,101.14                      | NEW YORK       |
| NORTH CAROLINA | 1,825,745.05                                      | 291,041.21                          | 23.4            | 7.1   | 107,311.35           | .1              |       | 805,215.54                  | 73.0            | 11.2  | 685,029.49           | 63.8            | 16.8  | 1,041,898.47                      | NORTH CAROLINA |
| NORTH DAKOTA   | 1,256,712.40                                      | 72,231.29                           | 60.0            | 13.3  | 10,943.59            |                 | .3    | 1,215,230.41                | 418.2           | 105.7 | 442,186.43           | 143.2           | 83.6  | 1,051,973.14                      | NORTH DAKOTA   |
| OHIO           | 3,723,824.51                                      | 681,593.51                          | 25.4            | 9.8   | 162,400.00           | 8.5             |       | 3,549,353.15                | 220.6           | .1    | 1,190,774.01         | 81.1            | 5.1   | 3,310,903.41                      | OHIO           |
| OKLAHOMA       | 1,254,495.13                                      | 513,908.12                          | 47.5            | 7.1   | 1,058,978.37         | 54.2            | 37.7  | 328,504.23                  | 41.8            | 8.0   | 1,673,394.71         | 176.1           | 7.7   | 1,152,325.51                      | OKLAHOMA       |
| OREGON         | 2,256,946.36                                      | 77,092.55                           | 20.5            |       |                      |                 |       | 389,805.71                  | 32.1            |       | 599,077.20           | 25.9            |       | 374,508.76                        | OREGON         |
| PENNSYLVANIA   | 3,642,841.85                                      | 65,393.00                           | 4.4             |       |                      |                 |       | 3,288,753.53                | 197.3           | 14.1  | 2,521,709.31         | 156.0           |       | 3,454,535.12                      | PENNSYLVANIA   |
| RHODE ISLAND   | 775,143.23  |                                     |                 |       | 51,000.00            | 1.4             |       | 89,340.00                   | 6.0             |       | 104,694.55           | 5.6             |       | 402,771.00                        | RHODE ISLAND   |
| SOUTH CAROLINA | 1,084,666.55                                      |                                     |                 |       | 69,466.89            |                 |       | 1,221,452.17                | 144.8           | 64.7  | 708,354.95           | 56.5            | 81.2  | 705,933.22                        | SOUTH CAROLINA |
| SOUTH DAKOTA   | 1,152,192.89                                      | 39,918.74                           | 11.5            |       |                      |                 |       | 1,354,493.39                | 413.3           | 39.3  | 630,361.51           | 211.9           |       | 947,595.12                        | SOUTH DAKOTA   |
| TENNESSEE      | 1,898,556.37                                      | 232,057.48                          | 4.1             | 16.3  | 490,399.23           | 31.9            | 8.0   | 1,245,495.65                | 67.8            | 36.6  | 2,039,973.59         | 98.8            | 57.8  | 1,339,356.96                      | TENNESSEE      |
| TEXAS          | 3,924,235.07                                      | 2,051,913.85                        | 169.5           | 75.8  | 1,525,145.19         | * 57.5          | 51.9  | 3,582,556.66                | 424.6           | 126.0 | 2,714,453.35         | 204.0           | 100.1 | 3,057,330.46                      | TEXAS          |
| UTAH           | 717,211.43  | 110,000.00                          | 5.4             |       | 167,691.59           | 4.3             |       | 816,504.62                  | 62.6            |       | 680,527.63           | 67.5            | 22.8  | 789,358.52                        | UTAH           |
| VERMONT        | 415,745.05  |                                     |                 |       |                      |                 |       | 288,777.15                  | 20.5            |       | 187,035.58           | 11.4            |       | 331,593.45                        | VERMONT        |
| VIRGINIA       | 1,313,375.12                                      | 81,827.52                           | 5.5             |       | 59,029.63            |                 | .2    | 338,115.31                  | 54.4            | 15.2  | 715,331.71           | 53.3            | 6.4   | 1,093,551.35                      | VIRGINIA       |
| WASHINGTON     | 1,390,737.83                                      | 30,800.00                           | 5.3             |       | 49,000.00            | 6.6             |       | 1,369,875.25                | 83.9            | 18.1  | 108,500.00           | 7.7             |       | 1,286,968.38                      | WASHINGTON     |
| WEST VIRGINIA  | 1,068,307.58                                      |                                     |                 |       |                      |                 |       | 453,397.42                  | 39.7            | 12.4  | 323,054.27           | 16.1            |       | 910,999.23                        | WEST VIRGINIA  |
| WISCONSIN      | 3,183,250.30                                      | 26,690.00                           | 5.8             |       | 77,000.00            | 3.1             |       | 1,777,839.96                | 121.2           | 8.9   | 1,172,614.48         | 65.1            | 20.4  | 1,908,359.21                      | WISCONSIN      |
| WYOMING        | 1,432,021.55                                      | 80,167.36                           | 5.4             |       | 80,167.36            | 5.4             |       | 540,026.49                  | 91.5            |       | 331,085.66           | 65.5            | .4    | 1,041,601.11                      | WYOMING        |
| HAWAII         |   |                                     |                 |       |                      |                 |       | 57,507.20                   | 1.8             |       |                      |                 |       | 77,951.67                         | HAWAII         |
| TOTALS         | 94,679,396.05                                     | 9,021,780.55                        | 722.8           | 242.9 | 7,910,853.77         | 370.8           | 129.9 | 79,007,399.33               | 7,308.1         | 930.5 | 46,058,596.67        | 3,690.4         | 757.1 | 62,654,950.79                     | TOTALS         |

C

C.

SUMMARY OF FEDERAL HIGHWAY LEGISLATION  
INTRODUCED IN THE  
SECOND SESSION OF THE SEVENTIETH CONGRESS  
ENDING MARCH 4, 1929  
(NOT FOR RELEASE)

THE FOLLOWING IS A SUMMARY OF THE FEDERAL HIGHWAY LEGISLATION INTRODUCED IN THE SECOND SESSION OF THE SEVENTIETH CONGRESS BEGINNING ON DECEMBER 3, 1928, AND ENDING ON MARCH 4, 1929. FOR READY-REFERENCE PURPOSES THOSE BILLS WHICH WERE PASSED BY CONGRESS, AND BECAME LAWS WITH THE SIGNATURE OF THE PRESIDENT, ARE PRECEDED BY THREE ASTERISKS.

H.R. 14665.- INTRODUCED IN THE HOUSE ON DECEMBER 4, 1928, BY D. B. COLTON OF UTAH AND REFERRED TO THE COMMITTEE ON POST OFFICES AND POST ROADS. NO FURTHER ACTION TAKEN. PROVIDES FOR THE AMENDMENT OF EXISTING FEDERAL-AID ROAD LEGISLATION BY AUTHORIZING AN APPROPRIATION OF \$3,500,000 FOR EACH OF THE FISCAL YEARS 1929, 1930, AND 1931, FOR THE CONSTRUCTION AND MAINTENANCE OF THE MAIN ROADS THROUGH UNAPPROPRIATED OR UNRESERVED PUBLIC LANDS, NON-TAXABLE INDIAN LANDS, OR OTHER FEDERAL RESERVATIONS. DESCRIBED IN THE NOVEMBER, 1928 TO FEBRUARY, 1929, NEWS LETTER.

\*\*\*H.R. 15089.- DEPARTMENT OF THE INTERIOR APPROPRIATION BILL FOR THE FISCAL YEAR ENDING JUNE 30, 1930. SIGNED BY THE PRESIDENT ON MARCH 2, 1929 AS PUBLIC No. 1033. PROVIDES FOR THE CONSTRUCTION OF ROADS, TRAILS, AND BRIDGES IN THE NATIONAL PARKS AND MONUMENTS UNDER THE DIRECTION OF THE DEPARTMENT OF THE INTERIOR; TO BE IMMEDIATELY AVAILABLE AND REMAIN AVAILABLE UNTIL EXPENDED, \$5,000,000, WHICH INCLUDES \$4,000,000, THE AMOUNT OF THE CONTRACTUAL AUTHORIZATION CONTAINED IN THE ACT MAKING APPROPRIATIONS FOR THE DEPARTMENT OF THE INTERIOR FOR THE FISCAL YEAR 1929. PROVIDES FURTHER THAT IN ADDITION TO THE AMOUNT APPROPRIATED THE SECRETARY OF THE INTERIOR MAY ALSO APPROVE PROJECTS, INCUR OBLIGATIONS, AND ENTER INTO CONTRACTS FOR ADDITIONAL WORK NOT EXCEEDING A TOTAL OF \$2,500,000 AND HIS ACTION IN SO DOING SHALL BE DEEMED A CONTRACTUAL OBLIGATION OF THE FEDERAL GOVERNMENT FOR THE PAYMENT OF THE COST THEREOF AND APPROPRIATIONS HEREAFTER MADE FOR THE CONSTRUCTION OF ROADS IN NATIONAL PARKS AND MONUMENTS SHALL BE CONSIDERED AVAILABLE FOR THE PURPOSE OF DISCHARGING THE OBLIGATION SO CREATED.



\*\*\*H.R. 15386.- DEPARTMENT OF AGRICULTURE APPROPRIATION BILL FOR THE FISCAL YEAR ENDING JUNE 30, 1930. SIGNED BY THE PRESIDENT ON FEBRUARY 16, 1929 AS PUBLIC No. 769. PROVIDES FOR FOREST ROADS AND TRAILS UNDER SECTION 23 OF THE FEDERAL HIGHWAY ACT, AN APPROPRIATION OF \$8,000,000 COMPOSED OF \$3,945,000, PART OF THE \$7,500,000 AUTHORIZED TO BE APPROPRIATED FOR THE FISCAL YEAR 1929, AND \$4,055,000, PART OF THE AMOUNT AUTHORIZED TO BE APPROPRIATED FOR THE FISCAL YEAR 1930. PROVIDES FOR FEDERAL-AID ROAD CONSTRUCTION \$74,000,000 COMPOSED OF \$31,800,000, THE REMAINDER OF THE SUM OF \$75,000,000 AUTHORIZED TO BE APPROPRIATED FOR THE FISCAL YEAR 1928, AND \$42,200,000, PART OF THE \$75,000,000 AUTHORIZED TO BE APPROPRIATED FOR THE FISCAL YEAR 1929. PROVIDES FOR THE CONSTRUCTION OF THE MOUNT VERNON MEMORIAL HIGHWAY BY THE APPROPRIATION OF THE UNEXPENDED BALANCE OF THE \$2,500,000 FOR THIS PURPOSE CONTAINED IN THE SECOND DEFICIENCY ACT FOR THE FISCAL YEAR 1928.

H.R. 15621.- INTRODUCED IN THE HOUSE ON DECEMBER 20, 1928, BY J. S. PARKER OF NEW YORK AND REFERRED TO THE COMMITTEE ON INTERSTATE AND FOREIGN COMMERCE, NO FURTHER ACTION TAKEN. PROVIDES FOR THE REGULATION OF INTERSTATE COMMERCE BY MOTOR VEHICLES OPERATING AS COMMON CARRIERS OF PERSONS ON THE PUBLIC HIGHWAYS. PROVIDES THAT OPERATORS OF MOTOR CARRIERS IN INTERSTATE COMMERCE MUST OBTAIN CERTIFICATES OF PUBLIC CONVENIENCE AND NECESSITY FROM THE INTERSTATE COMMERCE COMMISSION ACTING THROUGH JOINT BOARDS MADE UP IN EACH CASE OF REPRESENTATIVES OF THE BOARDS OF THE SEVERAL STATES IN WHICH ANY PART OF THE INTERSTATE OPERATION IS, OR IS PROPOSED TO BE, CONDUCTED. DESCRIBED IN THE NOVEMBER, 1928, TO FEBRUARY, 1929, NEWS LETTER.

\*\*\*H.R. 15712.- WAR DEPARTMENT APPROPRIATION BILL FOR THE FISCAL YEAR ENDING JUNE 30, 1930. SIGNED BY THE PRESIDENT ON FEBRUARY 28, 1929, AS PUBLIC No. 843. APPROPRIATES \$3,654,000 TO BE AVAILABLE IMMEDIATELY AND REMAIN AVAILABLE UNTIL EXPENDED FOR THE RELIEF OF THE STATES OF MISSOURI, MISSISSIPPI, LOUISIANA, AND ARKANSAS FOR THE RESTORATION OF THE ROADS AND BRIDGES DAMAGED OR DESTROYED BY THE FLOODS OF 1927. SIMILAR LEGISLATION WAS INCLUDED IN S. 5201 DESCRIBED IN THE NEWS LETTER FOR NOVEMBER, 1928 TO FEBRUARY, 1929.

H.R. 16307.- INTRODUCED IN THE HOUSE ON JANUARY 16, 1929 BY C. L. BEEDY OF MAINE AND REFERRED TO THE COMMITTEE ON ROADS. NO FURTHER ACTION TAKEN. PROVIDES THAT, NOTWITHSTANDING EXISTING FEDERAL-AID ROAD LEGISLATION, THE SECRETARY OF AGRICULTURE MAY EXTEND FEDERAL AID IN THE IMPROVEMENT OF ANY



HIGHWAY WHICH LEADS DIRECTLY TO OR FROM A TOLL BRIDGE WHEN AN AGREEMENT, UPON TERMS SATISFACTORY TO THE SECRETARY, HAS BEEN ENTERED INTO FOR THE FREEING OF SUCH BRIDGE OF ALL TOLL CHARGES WITHIN A REASONABLE TIME AND FOR ITS MAINTENANCE AND OPERATION THEREAFTER AS A FREE BRIDGE.

H.R. 16308.- INTRODUCED IN THE HOUSE ON JANUARY 16, 1929, BY C. ADKINS OF ILLINOIS AND REFERRED TO THE COMMITTEE ON ROADS. NO FURTHER ACTION TAKEN. PROVIDES FOR THE ESTABLISHMENT OF THE LINCOLN MEMORIAL HIGHWAY COMMISSION TO MAKE A SURVEY AND RECOMMENDATIONS WITH REGARD TO THE CONSTRUCTION OF A HIGHWAY BETWEEN THE CITIES OF CHARLESTON AND FARMINGTON, ILL., AND PASSING THROUGH SHILOH CEMETERY AND OTHER PLACES IN COLES COUNTY, ILL., HISTORICALLY CONNECTED WITH THE LIFE OF ABRAHAM LINCOLN IN ILLINOIS PRIOR TO HIS ASSUMING THE DUTIES OF THE PRESIDENCY.

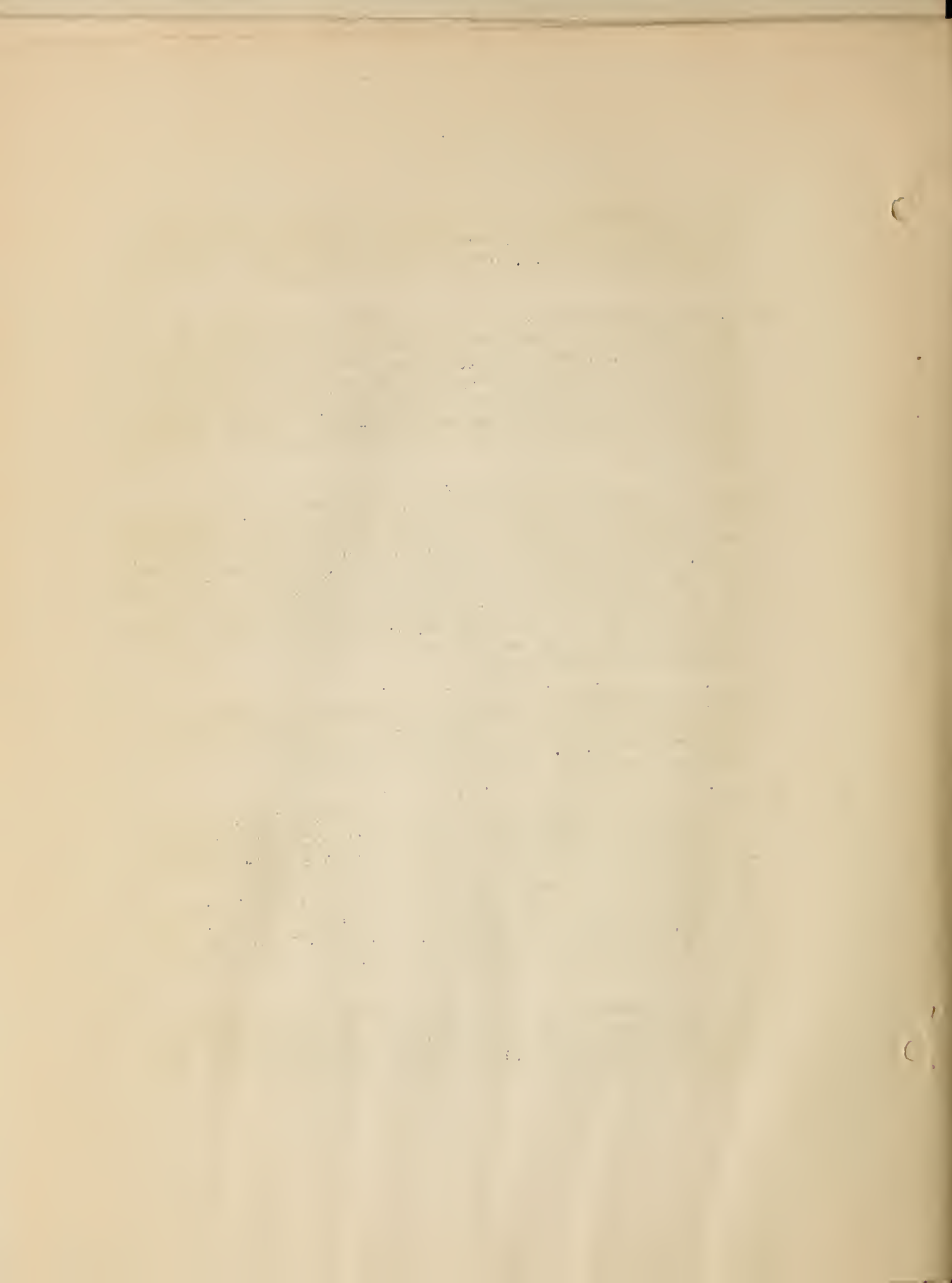
H.R. 16773.- INTRODUCED IN THE HOUSE ON JANUARY 31, 1929, BY B. E. KEMP OF LOUISIANA AND REFERRED TO THE COMMITTEE ON ROADS. NO FURTHER ACTION TAKEN. AUTHORIZES AN APPROPRIATION OF \$3,654,000 FOR THE RELIEF OF THE STATES OF MISSOURI, MISSISSIPPI, LOUISIANA AND ARKANSAS IN THE MATTER OF ROADS AND BRIDGES DAMAGED OR DESTROYED BY THE FLOODS OF 1927. THIS BILL IS IDENTICAL WITH S. 5201. THIS LEGISLATION WAS INCLUDED IN H.R. 15712 AS DESCRIBED ABOVE.

H.J. RES. 341.- INTRODUCED IN THE HOUSE ON DECEMBER 7, 1928, BY C. J. MCLEOD OF MICHIGAN, AND REFERRED TO THE COMMITTEE ON FOREIGN AFFAIRS. NO FURTHER ACTION TAKEN. AUTHORIZES AND DIRECTS THE PRESIDENT TO INVITE THE GOVERNMENT OF EACH NATION ON THE CONTINENTS OF SOUTH AND NORTH AMERICA AND OF CENTRAL AMERICA TO NAME AN ENGINEER AND AN ECONOMIST TO REPRESENT SUCH COUNTRY IN A JOINT CONFERENCE, TO BE HELD AS SOON AS PRACTICABLE AT WASHINGTON, D. C., UPON QUESTIONS RELATING TO THE CONSTRUCTION OF AN INTER-AMERICAN HIGHWAY ON THE WESTERN HEMISPHERE.

\*\*\*H.J. RES. 355.- INTRODUCED IN THE HOUSE ON DECEMBER 15, 1928, BY C. COLE OF IOWA, AND REFERRED TO THE COMMITTEE ON FOREIGN AFFAIRS. PASSED BOTH HOUSES OF CONGRESS AND SIGNED BY THE PRESIDENT ON MARCH 4, 1929, AS PUBLIC No. 104. AUTHORIZES AN APPROPRIATION OF \$50,000 TO ENABLE THE SECRETARY OF STATE TO COOPERATE WITH THE SEVERAL GOVERNMENTS, MEMBERS OF THE PAN AMERICAN UNION, IN THE UNDERTAKING AND FINANCING AND BUILDING AN INTER-AMERICAN HIGHWAY OR HIGHWAYS.



- S. 4301.- INTRODUCED IN THE SENATE ON DECEMBER 5, 1928, BY T. L. ODDIE OF NEVADA AND REFERRED TO THE COMMITTEE ON POST OFFICES AND POST ROADS. NO FURTHER ACTION TAKEN. THIS BILL IS IDENTICAL WITH H.R. 14665 AS DESCRIBED ABOVE.
- S. 4659.- INTRODUCED IN THE SENATE ON DECEMBER 5, 1928, BY S. W. BROOKHART OF IOWA AND REFERRED TO THE COMMITTEE ON COMMERCE. NO FURTHER ACTION TAKEN. PROVIDES REGULATIONS FOR THE CONSTRUCTION, RECONSTRUCTION, REPAIR, MAINTENANCE, AND OPERATION OF BRIDGES AND APPROACHES THERETO OVER ANY OF THE NAVIGABLE WATERS OF THE UNITED STATES. INCLUDES REGULATIONS FOR PRIVATELY AND PUBLICLY CONSTRUCTED, OWNED AND OPERATED BRIDGES.
- S. 4980.- INTRODUCED IN THE SENATE ON DECEMBER 17, 1928, BY S. W. BROOKHART OF IOWA. NO FURTHER ACTION TAKEN. AUTHORIZES THE SECRETARY OF AGRICULTURE TO ACQUIRE ANY TOLL BRIDGES WITHIN THE UNITED STATES, OR CONNECTING WITH ANY FOREIGN COUNTRY, THE FREE OPERATION OF WHICH HE DEEMS ADVANTAGEOUS IN THE INTEREST OF INTERSTATE AND FOREIGN COMMERCE, IMPROVEMENT OF THE POSTAL SERVICE, AND PROVISION FOR THE NATIONAL DEFENSE. SUCH ACQUISITION SHALL, IN THE SECRETARY'S DISCRETION, BE MADE BY PURCHASE OR BY CONDEMNATION.
- S. 5085.- INTRODUCED IN THE SENATE ON DECEMBER 21, 1928, BY J. E. WATSON, OF INDIANA, AND REFERRED TO THE COMMITTEE ON INTERSTATE COMMERCE. NO FURTHER ACTION TAKEN. THIS BILL IS IDENTICAL WITH H. R. 15621 AS DESCRIBED ABOVE.
- S. 5201.- INTRODUCED IN THE SENATE ON JANUARY 5, 1929, BY J. T. ROBINSON OF ARKANSAS AND REFERRED TO THE COMMITTEE ON AGRICULTURE AND FORESTRY AND REPORTED FAVORABLY WITH AMENDMENTS ON FEBRUARY 2, 1929. AUTHORIZES AN APPROPRIATION OF \$3,654,000 FOR THE RELIEF OF THE STATES OF MISSOURI, MISSISSIPPI, LOUISIANA, AND ARKANSAS IN THE MATTER OF ROADS AND BRIDGES DAMAGED OR DESTROYED BY THE FLOODS OF 1927. THIS BILL IS IDENTICAL WITH H.R. 16773. THIS LEGISLATION WAS INCLUDED IN H.R. 15712 AS DESCRIBED ABOVE.
- S. 5535.- INTRODUCED IN THE SENATE ON JANUARY 24, 1929, BY C. S. DENEEN OF ILLINOIS, AND REFERRED TO THE COMMITTEE ON POST OFFICES AND POST ROADS. NO FURTHER ACTION TAKEN. THIS BILL IS IDENTICAL WITH H.R. 16308 AS DESCRIBED ABOVE.



S. 5808.- INTRODUCED IN THE SENATE ON FEBRUARY 15, 1929, BY T. L. ODDIE OF NEVADA AND REFERRED TO THE COMMITTEE ON POST OFFICES AND POST ROADS. NO FURTHER ACTION TAKEN. THIS BILL IS IDENTICAL WITH H.R. 14665 AS DESCRIBED ABOVE.

S. CON. RES. 25.- INTRODUCED IN THE SENATE ON DECEMBER 10, 1928, BY T. L. ODDIE OF NEVADA, AND REFERRED TO THE COMMITTEE TO AUDIT AND CONTROL THE CONTINGENT EXPENSES OF THE SENATE. NO FURTHER ACTION TAKEN. PROVIDES THAT A JOINT SELECT COMMITTEE BE CREATED, TO BE KNOWN AS THE SELECT JOINT COMMITTEE TO INVESTIGATE TOLL BRIDGES ON THE PUBLIC HIGHWAYS AND FERRIES, WHICH COMMITTEE SHALL CONSIST OF 3 SENATORS WHO ARE MEMBERS OF THE COMMITTEE ON POST OFFICES AND POST ROADS, TO BE APPOINTED BY THE VICE PRESIDENT, AND 3 MEMBERS OF THE HOUSE OF REPRESENTATIVES WHO ARE MEMBERS OF THE COMMITTEE ON ROADS, TO BE APPOINTED BY THE SPEAKER, SAID APPOINTMENTS TO BE MADE FROM AMONG THOSE WHO ARE MEMBERS OF THE SEVENTY-FIRST CONGRESS.

#### CORRECTION

IN THE MARCH NEWS LETTER THE REFERENCE MADE TO THE SEVENTY-FIRST CONGRESS ON PAGE 25 SHOULD HAVE BEEN GIVEN AS THE SEVENTIETH CONGRESS.



## SILICON STEEL GROWING IN FAVOR FOR LONG-SPAN BRIDGES

COMPILED FROM DATA SUBMITTED BY O. L. GROVER,  
BRIDGE ENGINEER.

THE USE OF SILICON STEEL FOR LONG-SPAN BRIDGES IS GROWING IN FAVOR TO SUCH AN EXTENT THAT IT SHOULD BE GIVEN CAREFUL CONSIDERATION IN THE DESIGN OF MAJOR STRUCTURES. THE UNIT STRESSES PERMISSIBLE IN THE SILICON STEEL ARE ABOUT 50 PER CENT GREATER THAN THE ALLOWABLE STRESSES FOR ORDINARY STRUCTURAL STEEL. THIS FACT PERMITS REDUCTION IN THE AREA OF MEMBERS WHICH, BY REDUCING THE DEAD WEIGHT OF THE BRIDGE MAKES POSSIBLE A FURTHER REDUCTION IN THE AMOUNT OF THE STEEL REQUIRED. THE GREATER DUCTILITY OF THE SILICON STEEL AS COMPARED WITH ORDINARY STRUCTURAL STEEL WOULD INDICATE GREATER SAFETY FOR BRIDGE TRAFFIC, WHERE THE YIELD POINT IS EXCEEDED, BECAUSE OF THE WARNING OF POSSIBLE FAILURE GIVEN BY THE DISTORTION OF THE BRIDGE MEMBERS.

SILICON STEEL HAS BEEN USED FOR THE MAIN MEMBERS OF THE LONG TRUSSES IN A NUMBER OF MAJOR STRUCTURES COMPLETED RECENTLY OR NOW UNDER CONSTRUCTION. ORDINARILY ITS COST PER POUND IS NOT MORE THAN 1 CENT HIGHER THAN STRUCTURAL CARBON STEEL AND UNDER VERY FAVORABLE CONDITIONS THE ADDED COST HAS BEEN ONLY A HALF CENT A POUND. THE COST DIFFERENTIAL MAY BE MAINTAINED AT A MINIMUM WHERE THE QUANTITIES OF STEEL REQUIRED ARE LARGE AND THE VARIETIES OF SHAPES ARE LIMITED IN NUMBER. THIS CONDITION EXISTS NOW BECAUSE SILICON STEEL CAN BE OBTAINED ONLY ON A SPECIAL ORDER AND UNTIL ITS USE BECOMES SUFFICIENTLY GENERAL FOR THE STOCKING OF VARIOUS STANDARD SIZES THERE WILL BE A NEED FOR ESPECIAL CARE IN THE DESIGN SO AS TO RESTRICT THE NUMBER OF SHAPES TO A MINIMUM. THE INDICATIONS ARE, HOWEVER, THAT THE INCREASING USE OF SILICON STEEL WILL SOON MAKE IT A STANDARD MATERIAL WHICH MANUFACTURERS WILL CARRY IN STOCK. UNDER EXISTING CONDITIONS, HOWEVER, WHERE THERE ARE A NUMBER OF IDENTICAL SPANS AND WHERE I-BEAMS ARE USED FOR STRINGERS OF TRUSS SPANS AND TRESTLES, SO THAT 400,000 POUNDS OF ONE DEPTH OF BEAM MAY BE ROLLED, THE PRICE PER POUND WOULD PROBABLY BE BID AT 0.5 TO 0.7 OF A CENT ABOVE THE SAME SHAPES OF CARBON STEEL. BUT UNLESS THERE IS A SUFFICIENT QUANTITY OF MEMBERS OF THE SAME SHAPE AND AREA OF CROSS SECTION TO OFFSET THE COST OF THE SPECIAL OPERATIONS REQUIRED IN THE ROLLING MILL IT IS PROBABLE THAT THE COST OF THE SILICON STEEL WOULD BE SUCH THAT THERE WOULD BE NO ECONOMY IN ITS USE. IT IS ALSO POSSIBLE THAT FURTHER STUDY MAY SHOW THE ADVANTAGE OF THE GENERAL USE OF RIVETS MADE OF STEEL WITH HIGHER ELASTIC LIMITS. THIS WOULD REDUCE THE REQUIRED NUMBER OF RIVETS AND THE SIZE OF THE GUSSET PLATES AS COMPARED WITH PRESENT PRACTICE.



## SILICON STEEL USED IN A NUMBER OF IMPORTANT BRIDGES

SILICON STEEL HAS BEEN USED IN A NUMBER OF IMPORTANT BRIDGES INCLUDING THE HARAHAH BRIDGE OVER THE MISSISSIPPI RIVER AT MEMPHIS, THE ST. JOSEPH HIGHWAY BRIDGE OVER THE MISSOURI RIVER, AND THE DELAWARE RIVER BRIDGE AT PHILADELPHIA. BOTH THE LUSITANIA AND MAURETANIA WERE PARTLY CONSTRUCTED OF HIGH-SILICON STEEL AND ONE INVESTIGATOR COMMENTED ON THE BETTER ELASTIC LIMIT OBTAINED IN THE HIGH-SILICON, HIGH-TENSILE SHIP-STEEL WITH TENSILE STRENGTH AND ELONGATION PRACTICALLY THE SAME AS IN HIGH-CARBON, HIGH-TENSILE STEEL <sup>1/</sup>. IN THE ST. JOSEPH HIGHWAY BRIDGE A SAVING OF \$37,000 WAS ACCOMPLISHED BY THE USE OF SILICON STEEL. THIS WAS COMPUTED FROM THE DIFFERENCE OF 0.7 CENT PER POUND BETWEEN THE ACTUAL BID PRICES FOR SILICON STEEL AND ORDINARY CARBON STEEL <sup>2/</sup>.

THE USE OF THE TERM SILICON STEEL FOR THE PRESENT AMERICAN PRODUCT IS IN REALITY A MISNOMER, SINCE THE GENERAL PRACTICE IS TO OBTAIN WITH A HIGH MANGANESE OR SILICON CONTENT, OR BOTH, A STEEL WITH THE SAME HIGH TENSILE-STRENGTH AS THAT ACCOMPLISHED WITH A PREDOMINATING HIGH PERCENTAGE OF SILICON. FOR EXAMPLE IN THE DELAWARE RIVER BRIDGE THE CHEMICAL SPECIFICATIONS FOR THE SO-CALLED BASIC-SILICON STEEL AS DETERMINED FROM DRILLINGS FROM A TEST INGOT TAKEN DURING THE POURING OF EACH MELT WERE AS FOLLOWS: <sup>3/</sup>

| CARBON   | MANGANESE | SILICON  | PHOSPHORUS | SULPHUR  |
|----------|-----------|----------|------------|----------|
| NOT OVER | NOT OVER  | PER CENT | NOT OVER   | NOT OVER |
| PER CENT | PER CENT  | 0.20 TO  | PER CENT   | PER CENT |
| 0.40     | 1.00      | 0.40     | 0.04       | 0.05     |

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<sup>1/</sup> HIGH SILICON STRUCTURAL STEEL, BY H. W. GILLETT. TECHNOLOGIC PAPERS OF THE BUREAU OF STANDARDS, No. 331, p. 124. (NOTE: THIS BULLETIN IS ALSO THE SOURCE OF A LARGE PORTION OF THE INFORMATION GIVEN ELSEWHERE IN THIS ARTICLE)

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<sup>2/</sup> CONTINUOUS TRUSS HIGHWAY BRIDGE OVER MISSOURI RIVER, BY L.J. SVERDRUP. ENGINEERING NEWS-RECORD, JANUARY 17, 1929, p. 100

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<sup>3/</sup> PROBLEMS IN FABRICATING SILICON STEEL FOR DELAWARE BRIDGE, BY H. T. MORRIS, ENGINEERING NEWS-RECORD, FEBRUARY 9, 1928, p. 231.

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## INTEREST REVIVED IN SILICON STEEL IN 1925

THE REVIVAL OF THE INTEREST IN SILICON STEEL DATES BACK TO 1925 WHEN A GERMAN STEEL, ADVOCATED BY THE BERLINER AKTIENGESELLSCHAFT FÜR EISENGIESSEREI UND MASCHINENFABRIKATION, FORMERLY THE J. C. FREUND CO., UNDER THE NAME OF "FREUND" OR "F" STEEL, AROUSED CONSIDERABLE INTEREST AMONG GERMAN STRUCTURAL ENGINEERS. SPECIMENS OF THE GERMAN STEEL WERE SUBMITTED TO THE UNITED STATES BUREAU OF STANDARDS AND THEIR TESTS SHOWED THAT THE STEEL COMBINED THE DESIRABLE PROPERTIES OF HIGH YIELD POINT AND HIGH DUCTILITY. THE GERMAN STEEL WAS UNUSUALLY HIGH IN SILICON, WITH A CONTENT OF 1 PER CENT, AND LOW IN CARBON, THE PERCENTAGE OF THE LATTER CONSTITUENT BEING LESS THAN 0.15 PER CENT. THE GERMAN PROPONENTS CLAIMED THE "FREUND" STEEL AS A NEW DEVELOPMENT BUT FURTHER INVESTIGATION INDICATED THAT TETMAJER HAD SHOWN IN 1884 THAT STEELS OF 0.11 TO 0.18 PER CENT C, 0.90 PER CENT MN, AND 0.70 TO 1.0 PER CENT SI, (WITH THE VERY HIGH S AND P CHARACTERISTIC OF THE STEEL OF THOSE DAYS) HAD AS GOOD OR BETTER DUCTILITY AND HIGHER STRENGTH THAN STEEL OF CORRESPONDING OR EVEN HIGHER CARBON CONTENT WITH 0.45 PER CENT MN AND NEGLIGIBLE SI <sup>4/</sup>.

## CHOICE OF AMERICAN ALLOYS DETERMINED BY RELATIVE COST

THE AMERICAN PRACTICE FOR OBTAINING HIGH-TENSILE STEEL SEEMS TO TREND TOWARD THE USE OF MORE CARBON, SAY 0.30 TO 0.35 PER CENT, WITH AN INCREASE IN THE MANGANESE OR SILICON CONTENT, OR BOTH. BOTH SILICON AND MANGANESE ARE RELATIVELY CHEAP ALLOYING ELEMENTS BUT SINCE THE SPECIFICATIONS FOR SILICON STRUCTURAL STEEL PERMIT THE REQUIRED PROPERTIES TO BE OBTAINED BY EITHER MANGANESE OR SILICON, THE COMPOSITION OF THE PRODUCT WILL BE DETERMINED BY THE MANUFACTURERS, DEPENDING UPON THE RELATIVE PRICES OF THE FERRO-ALLOYS. THERE IS NO DOUBT BUT THAT MANY NICKEL, VANADIUM, CHROMIUM, OR OTHER RECOGNIZED ALLOY STEELS OWE A GREAT DEAL OF THEIR STRENGTH TO HIGH MANGANESE CONTENTS. ALTHOUGH THE MANGANESE IS SELDOM ALLUDED TO IN NAMING THESE STEELS, ITS INFLUENCE AS A SOLE ALLOYING AGENT HAS LONG BEEN UNDERSTOOD.

## NAVY SPECIFICATIONS HAVE INCLUDED SILICON STEEL SINCE 1916

IT HAS LONG BEEN KNOWN THAT BY REDUCING THE CARBON CONTENT AND RAISING THE MANGANESE OR SILICON, OR BOTH, THAT STEELS ARE OBTAINED WHICH HAVE A GREATER DUCTILITY FOR A GIVEN STRENGTH THAN

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<sup>4/</sup> HIGH SILICON STRUCTURAL STEEL, BY H. W. GILLETT.

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THOSE OBTAINED WITH A HIGHER CARBON CONTENT. IN SPITE OF THIS KNOWLEDGE, HOWEVER, IT HAS BEEN CUSTOMARY TO ACCOMPLISH THE DESIRED DUCTILITY AND HIGH-TENSILE STRENGTH BY THE USE OF NICKEL IN STEELS TO BE USED AS ROLLED OR ANNEALED, WHILE FOR STEELS TO BE NORMALIZED OR QUENCHED AND TEMPERED, NICKEL, CHROMIUM, OR VANADIUM HAVE BEEN USED WHERE THE PROPERTIES OF CARBON STEELS NEEDED TO BE EXCEEDED TO SOME EXTENT. THE NAVY SPECIFICATIONS FOR OVER 12 YEARS HAVE COVERED STEEL OF 80,000 POUNDS PER SQUARE INCH IN TENSILE STRENGTH, AND EITHER CARBON, NICKEL, OR SILICON STEEL MAY BE SUPPLIED UNDER THESE SPECIFICATIONS. IF THE USERS OF STRUCTURAL STEEL ARE TO BASE DESIGN UPON YIELD POINT RATHER THAN UPON TENSILE STRENGTH, THEN A HIGHER YIELD POINT THAN THAT OF MEDIUM CARBON STEEL, WITHOUT NOTABLE LOSS IN DUCTILITY MAY BE ACCOMPLISHED WITH AN INCREASE IN MANGANESE OR SILICON, OR BOTH, TOGETHER WITH A LOWERING OF THE CARBON. THIS SEEMS TO OFFER A CHEAPER METHOD THAN THE USE OF NICKEL. SILICON WHEN PRESENT IN AN AMOUNT GREATER THAN 0.50 PER CENT SHOULD BE CONSIDERED AS AN ALLOYING ELEMENT SINCE ITS EFFECT IN RAISING THE YIELD POINT IS QUITE MARKED.

#### COMPARISON OF A.S.T.M. SPECIFICATIONS FAVORS SILICON STEEL

A COMPARISON OF THE STANDARD SPECIFICATIONS OF THE AMERICAN SOCIETY FOR TESTING MATERIALS, IN TABLE I, INDICATES THE ADVANTAGES OF SILICON STEEL OVER ORDINARY STRUCTURAL STEEL FOR BRIDGES.

TABLE I.- COMPARATIVE A.S.T.M. SPECIFICATIONS FOR SILICON STEEL AND ORDINARY STRUCTURAL STEEL

| SPECIFICATION       | TENSILE<br>STRENGTH     | MINIMUM<br>YIELD POINT  | MINIMUM<br>ELONGATION<br>IN 8 INCHES    | MINIMUM<br>REDUCTION<br>IN AREA |
|---------------------|-------------------------|-------------------------|---|---------------------------------|
|                     | LBS. PER<br>SQUARE INCH | LBS. PER<br>SQUARE INCH | PER CENT                                | PER CENT                        |
| SILICON STEEL:      |                         |                         |   |                                 |
| SERIAL DESIGNATION: |                         |                         |   |                                 |
| A 94-27             | 80,000 - 95,000         | 45,000                  | <u>1,500,000</u><br>TENSILE<br>STRENGTH | 30                              |
| STRUCTURAL STEEL:   |                         |                         |   |                                 |
| SERIAL DESIGNATION: |                         |                         |   |                                 |
| A 7-24              | 55,000 - 65,000         | 30,000                  | <u>1,500,000</u><br>TENSILE<br>STRENGTH | ---                             |



SINCE 16,000 TO 20,000 AND 24,000 TO 30,000 POUNDS PER SQUARE INCH ARE ALLOWABLE WORKING STRESSES FOR ORDINARY STRUCTURAL STEEL, AND SILICON STEEL, RESPECTIVELY, IT MAY BE COMPUTED THAT THE RATIO OF WORKING STRESS TO YIELD POINT IS IDENTICAL IN BOTH CASES, AT 53.3 TO 66.7 PER CENT. THIS WOULD INDICATE THAT THE FACTOR OF SAFETY BASED UPON THE YIELD POINT AS THE SAFE LIMIT IS SLIGHTLY LESS THAN 2 FOR EITHER KIND OF STEEL. FOR THE GIVEN MINIMUM TENSILE STRENGTH THE MINIMUM ELONGATION IN 8 INCHES FOR STRUCTURAL STEEL IS 15.8 AS COMPARED WITH 23.1 PER CENT IN FAVOR OF SILICON STEEL. WHILE THE MAXIMUM REDUCTION IN AREA IS NOT INDICATED BY THE A.S.T.M. SPECIFICATIONS IT HAS BEEN SHOWN IN THE GERMAN TESTS OF "FREUND" STEEL TO BE AS HIGH AS 60 PER CENT FOR AN ELONGATION OF 25 PER CENT IN 8 INCHES AS COMPARED WITH A MAXIMUM REDUCTION IN AREA BEFORE RUPTURE OF 30 PER CENT FOR ORDINARY STRUCTURAL STEEL. THE SUPERIOR DUCTILITY OF THE SILICON STEEL AS ALREADY NOTED MAKES IT HIGHLY ADVANTAGEOUS FOR BRIDGE WORK.

#### TWO NEW MOTION PICTURES AVAILABLE FOR DISTRIBUTION

TWO NEW MOTION PICTURES, RECENTLY COMPLETED FOR THE BUREAU BY THE OFFICE OF MOTION PICTURES OF THE DEPARTMENT, ARE NOW AVAILABLE FOR DISTRIBUTION. THE FILMS ARE ENTITLED "AMERICA'S GREAT BRIDGE TEST" AND "TRAVELER'S TOLL".

THE FIRST PICTURE ILLUSTRATES THE TESTS MADE BY THE BUREAU ON THE REINFORCED-CONCRETE ARCH-BRIDGE ACROSS THE YADKIN RIVER IN NORTH CAROLINA. THE STRUCTURE BUILT AS A FEDERAL-AID PROJECT IN 1923 HAD TO BE ABANDONED AND REMOVED BECAUSE IT WAS ABOUT TO BE FLOODED BY WATER IMPOUNDED BY A DAM CONSTRUCTED DOWNSTREAM. THE BUREAU AND THE NORTH CAROLINA STATE HIGHWAY DEPARTMENT TOOK ADVANTAGE OF THIS OPPORTUNITY TO MAKE EXTENSIVE LOADING TESTS ON A MODERN BRIDGE - PROBABLY THE FIRST ATTEMPT OF THIS KIND THAT HAS EVER BEEN MADE.

THE LOADS WERE IMPOSED WITH LARGE WOODEN TANKS FILLED WITH WATER AND MOVED TO CRITICAL POSITIONS OVER ONE OF THE 146-FOOT SPAN ARCHES. THE MEASUREMENTS WERE TAKEN FROM WOODEN SCAFFOLDING SUSPENDED UNDER THE ARCH. ALTHOUGH THE BRIDGE DID NOT COLLAPSE UNDER THE HEAVIEST LOAD, IT DID DEVELOP SOME VERY SERIOUS CRACKS WHICH WOULD HAVE MADE IT OF DOUBTFUL SAFETY FOR TRAFFIC.



THE SPECTACULAR PORTION OF THE FILM IS THE REMOVAL OF THE  $\frac{1}{2}$ -MILE LENGTH OF THE BRIDGE. THE WAR DEPARTMENT ACCOMPLISHED THIS WITH EXPLOSIVES. SEVENTEEN SPANS WERE DEMOLISHED IN THIS MANNER, 3 OF WHICH WERE 146 FEET IN LENGTH, AND THE OTHERS BEING CONCRETE-GIRDER APPROACH-SPANS. THE DEMOLITION WAS ACCOMPLISHED BY SHELL FIRE, AERIAL BOMBS, AND MINES.

THE FILM IS ONE REEL IN LENGTH AND REQUIRES 15 MINUTES FOR A SHOWING.

THE SECOND FILM - "TRAVELER'S TOLL" - IS THREE REELS IN LENGTH AND REQUIRES ABOUT 40 MINUTES FOR SHOWING. IT IS A DRAMATIZATION OF THE STORY OF AN OLD TOLL-GATE KEEPER AS TOLD TO TWO YOUNG TRANSCONTINENTAL MOTORISTS. HE TELLS OF THE DISCARDING OF THE TOLL-COLLECTION AND TAX-LABOR METHODS OF PAYING FOR ROAD IMPROVEMENT AND OF THE ADOPTION OF MODERN METHODS BASED UPON PROPERTY TAXES, MOTOR VEHICLES FEES, GASOLINE TAXES AND BOND ISSUES, WHICH IS MAKING POSSIBLE THE RAPID IMPROVEMENT OF THE HIGHWAYS OF THE UNITED STATES. THE FILM WAS PRODUCED BY THE OFFICE OF MOTION PICTURES FOR THE BUREAU.

THE OLD MAN'S YARN BEGINS IN 1875, WHEN HE WAS A YOUNG TOLL-GATE KEEPER, AND WHEN THE ONLY GOOD ROADS WERE THOSE BUILT BY TURNPIKE COMPANIES AND SUPPORTED BY TOLLS. THE ROADS WERE WELL KEPT AS LONG AS TRAFFIC WAS SUFFICIENT TO PAY FOR REPAIRS.

ONE SERIES OF SCENES SHOWS THE INEFFICIENCY OF THE DISCARDED SYSTEM OF MAINTAINING PUBLIC ROADS BY CREWS OF CITIZENS, EACH WORKING TWO OF THREE DAYS A YEAR, WITH PICK AND SHOVEL, IN LIEU OF TAX PAYMENT. THEN FOLLOWS THE COMING OF A RAILROAD BRANCH LINE WHICH EVENTUALLY TAKES TRAFFIC FROM THE TURNPIKE AND CAUSES THE TOLL-GATE KEEPER MUCH ANXIETY AS TO HIS INCOME. WITH DWINDLING TRAFFIC, THE PIKE GOES FROM BAD TO WORSE UNTIL IT IS TAKEN INTO THE STATE HIGHWAY SYSTEM.

WITH THE COMING OF THE AUTOMOBILE, THE TOLL-GATE KEEPER LISTENS TO THE STRENUOUS OBJECTION OF DRIVERS TO THE ANNOYANCE AND BOTHER OF PAYING TOLLS, AND WITH THE TAKING DOWN OF THE TOLL-RATE BOARD AND THE POSTING OF THE STATE-CONTROL NOTICE, THE OLD GATE-KEEPER IS OUT OF A JOB. UNWILLING TO LEAVE THE HIGHWAY HE ERECTS A GASOLINE FILLING-STATION ON THE SITE OF THE OLD TOLL-GATE. AND HERE THE TRANSCONTINENTAL MOTORISTS HAVE THEIR TANK FILLED AND LISTEN TO THE OLD MAN'S TALE OF HOW THE STATE, IN ORDER TO BUILD ROADS DEMANDED BY AUTOMOBILE TRAFFIC, LEVIED A PROPERTY TAX AND A SMALL LICENSE FEE, NOT LARGE ENOUGH, HOWEVER, TO DISCOURAGE



INCREASED USE OF MOTOR VEHICLES; OF HOW AUTOMOBILE TRAFFIC INCREASED SO RAPIDLY THAT THE STATE WAS LATER COMPELLED TO SPEED UP ROAD IMPROVEMENT; AND IN ORDER TO OBTAIN READY MONEY ISSUED ROAD BONDS AND ADOPTED THE GASOLINE TAX TO PAY THE INTEREST AND PRINCIPAL THEREON. THE OLD KEEPER TELLS HOW HE FEARED THE GAS TAX WOULD PUT HIM OUT OF BUSINESS, UNTIL HE REMEMBERED THERE WAS NO COMPLAINT OF TOLLS AS LONG AS THE ROAD WAS WELL KEPT. THEN, HE SAID, HE DECIDED TO SUPPORT THE BOND ISSUE.

#### U.S. HIGHWAYS MARKED WITH STANDARD SIGNS IN 28 STATES

THE STANDARD NUMBERED SHIELD-MARKERS HAD BEEN ERECTED, ON SEPTEMBER 1, 1928, ALONG THE UNITED STATES HIGHWAYS IN 28 STATES AS FOLLOWS: ARIZONA, GEORGIA, ILLINOIS, INDIANA, IOWA, KANSAS, MAINE, MARYLAND, MASSACHUSETTS, MICHIGAN, MINNESOTA, MISSISSIPPI, MISSOURI, NEBRASKA, NEW HAMPSHIRE, NEW MEXICO, NORTH CAROLINA, NORTH DAKOTA, OHIO, OKLAHOMA, PENNSYLVANIA, RHODE ISLAND, SOUTH DAKOTA, VERMONT, VIRGINIA, WEST VIRGINIA, WISCONSIN, AND WYOMING. IN ADDITION, 8 STATES - ARKANSAS, CONNECTICUT, DELAWARE, IDAHO, LOUISIANA, NEVADA, OREGON, AND SOUTH CAROLINA - HAVE MARKED 75 TO 99 PER CENT OF THE ROADS. FOUR STATES - CALIFORNIA, COLORADO, KENTUCKY, AND UTAH HAVE MARKED 50 TO 75 PER CENT OF THE U.S. HIGHWAYS LOCATED WITHIN THEIR BORDERS.

TENNESSEE AND FLORIDA HAVE ERECTED STANDARD CAUTION SIGNS ONLY BUT MARKERS ARE EXPECTED TO BE ERECTED IN THESE 2 STATES DURING THIS YEAR. ALABAMA AND WASHINGTON HAVE AWARDED CONTRACTS FOR THE ERECTION OF THE ROUTE MARKERS AND TEXAS AND MONTANA EXPECT TO BEGIN ERECTING THE MARKERS IN 1929. IN NEW YORK THE ROUTE NUMBERS HAVE BEEN PLACED ON NON-STANDARD STATE SIGNS AND IN ONLY ONE STATE - NEW JERSEY - HAVE THE STATE AUTHORITIES FAILED THUS FAR TO RECOGNIZE THE U.S. HIGHWAY NUMBERS.

PROGRESS IS BEING MADE IN THE CONTINUOUS MARKING OF THE TRANSCONTINENTAL ROUTES. U. S. ROUTE 1, FROM FORT KENT, ME., TO MIAMI, FLA., IS MARKED FOR THE ENTIRE DISTANCE EXCEPT IN NEW JERSEY AND FLORIDA. TWO PARALLEL NORTH-AND-SOUTH ROUTES - No. 51 FROM HURLEY, WIS., TO NEW ORLEANS, LA., AND No. 61 FROM THE CANADIAN BORDER TO NEW ORLEANS - ARE MARKED PRACTICALLY THE ENTIRE DISTANCE WITH THE EXCEPTION OF No. 51 THROUGH TENNESSEE. U.S. ROUTE 85 IS CONTINUOUSLY MARKED FROM THE CANADIAN BORDER TO EL PASO, TEX. OF THE MAIN EAST-AND-WEST HIGHWAYS, U.S. ROUTE 20 IS CONTINUOUSLY MARKED FROM BOSTON TO THE EAST ENTRANCE TO YELLOWSTONE NATIONAL PARK. THROUGH NEW YORK STATE THE NUMBERING IS

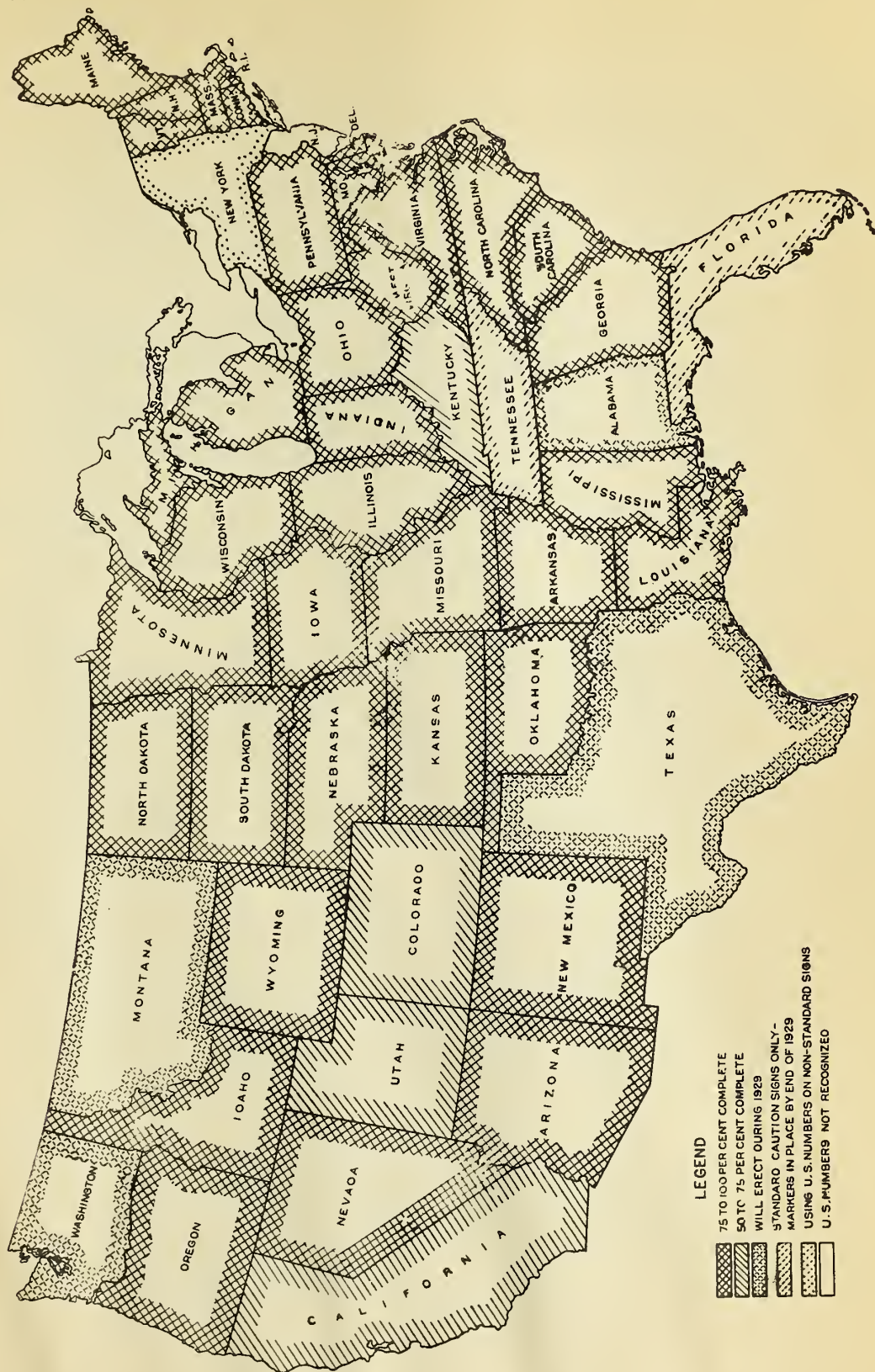


INDICATED ON STATE MARKERS. ON U.S. ROUTE 30 THE MARKINGS ARE TO BE FOUND FOR THE ENTIRE TRIP FROM PHILADELPHIA, PA., TO ASTORIA, ORE. U.S. ROUTES 40 AND 50 ARE CONTINUOUSLY MARKED FROM WILMINGTON, DEL., TO DENVER, COLO., AND FROM ANNAPOLIS, MD., TO PUEBLO, COLO., RESPECTIVELY.

THE ATTACHED CHART SHOWS THE STATUS OF SIGN ERECTION ON THE U. S. HIGHWAYS IN THE SEVERAL STATES AS OF SEPTEMBER 1, 1928.



# STATUS OF SIGN ERECTION ON U.S. HIGHWAYS, SEPTEMBER 1, 1928



## LEGEND

- 75 TO 100 PER CENT COMPLETE
- 50 TO 75 PER CENT COMPLETE
- WILL ERECT DURING 1929
- STANDARD CAUTION SIGNS ONLY - MARKERS IN PLACE BY END OF 1929
- USING U.S. NUMBERS ON NON-STANDARD SIGNS
- U.S. NUMBERS NOT RECOGNIZED



## BIBLIOGRAPHIES AVAILABLE FOR DISTRIBUTION

SEVEN BIBLIOGRAPHIES ON VARIOUS HIGHWAY SUBJECTS HAVE BEEN PREPARED BY THE STAFF OF THE HEADQUARTERS LIBRARY OF THE BUREAU. A LIMITED NUMBER OF COPIES ARE AVAILABLE FOR DISTRIBUTION. A BRIEF DESCRIPTION OF THE BIBLIOGRAPHIES FOLLOWS:

### CONCRETE

BIBLIOGRAPHY ON METHODS OF CURING CONCRETE, COMPILED BY MILDRED WILSON. 1929. 18 P. MIMEOGRAPHED.  
(GIVES FIVE PAGES OF GENERAL REFERENCES, THEN TAKES UP VARIOUS TYPES OF BITUMINOUS APPLICATIONS, BURLAP, CALCIUM CHLORIDE, EARTH AND WATER, SODIUM SILICATE, AND STEAM, COMPILED AT THE REQUEST OF THE HIGHWAY RESEARCH BOARD)

### CONSTRUCTION

SELECTED LIST OF BOOKS AND PERIODICALS ON ROAD CONSTRUCTION. NOV. 12, 1928. 6 P. MIMEOGRAPHED.

### FINANCE

PARTIAL BIBLIOGRAPHY ON HIGHWAY FINANCE, COMPILED BY MILDRED WILSON. DECEMBER, 1928. 118 P. MIMEOGRAPHED.  
(CLASSIFIED BY SUBJECTS, WITH AUTHOR INDEX AND LIST OF ADDRESSES OF MAGAZINES TO WHICH REFERENCES ARE MADE. GENERAL REFERENCES INCLUDE STATISTICS AND LEGISLATION, AND A SECTION DIVIDED BY GEOGRAPHIC DIVISIONS. METHODS OF FINANCING COVER FEDERAL AID, STATE AID, PAY-AS-YOU-GO PLAN, BONDS, AND VARIOUS METHODS OF TAXATION)

### MAINTENANCE

PARTIAL LIST OF REFERENCES ON HIGHWAY MAINTENANCE, COMPILED BY DOROTHY J. WILKS. DECEMBER, 1928. MIMEOGRAPHED.  
(CLASSIFIED BY SUBJECTS, WITH AUTHOR INDEX AND LIST OF ADDRESSES OF MAGAZINES TO WHICH REFERENCES ARE MADE. IN ADDITION TO GENERAL REFERENCES, SUBJECTS COVERED ARE ORGANIZATION, METHODS, TYPES OF ROADS, EQUIPMENT, COST, FINANCING, AND EDUCATION) (IN COURSE OF PREPARATION)

### SAFETY

ANNOTATED INDEX TO ARTICLES ON HIGHWAY SAFETY AND ALLIED SUBJECTS, PREPARED FOR THE COMMITTEE ON CAUSES AND PREVENTION OF HIGHWAY ACCIDENTS, HIGHWAY RESEARCH BOARD, BY THE STAFF OF THE LIBRARY OF THE BUREAU. DECEMBER, 1927. 388 P. MIMEOGRAPHED.  
(ITEMS ARE ARRANGED ACCORDING TO A CAREFULLY-WORKED-OUT



CLASSIFICATION-SCHEME, AND THIS CLASSIFICATION IS ATTACHED TO THE BIBLIOGRAPHY AS A TABLE OF CONTENTS. APPENDED ARE AN AUTHOR INDEX AND A LIST, WITH ADDRESSES OF MAGAZINES REFERRED TO. THE MAIN ITEMS OF THE CLASSIFICATION ARE I. GENERAL; II. STATISTICS; III. ACCIDENTS, CAUSES AND PREVENTION, SUBDIVIDED INTO RURAL HIGHWAYS, URBAN STREETS, TRAFFIC REGULATION, MOTOR VEHICLE DESIGN, EDUCATION, AND IV. MISCELLANEOUS. GRADE CROSSINGS ARE INCLUDED UNDER III.)

#### TOLL BRIDGES

PARTIAL LIST OF REFERENCES ON TOLL BRIDGES, COMPILED BY  
MILDRED WILSON. OCT. 26, 1928. 9 P. MIMEOGRAPHED.

#### RUBBER PAVEMENTS.

PARTIAL LIST OF REFERENCES ON RUBBER PAVEMENTS, COMPILED BY  
MILDRED WILSON. 1929. 10 P. TYPEWRITTEN.



## E. W. JAMES LOANED TO THE GOVERNMENT OF COLUMBIA

EDWIN W. JAMES, CHIEF OF THE DIVISION OF DESIGN OF THE BUREAU SAILED FROM NEW YORK ON MARCH 21, FOR SOUTH AMERICA TO SERVE AS A MEMBER OF A COMMISSION APPOINTED TO STUDY AND PREPARE PLANS FOR THE IMPROVEMENT OF THE ENTIRE TRANSPORTATION SYSTEM OF THE GOVERNMENT OF COLUMBIA. AT THE REQUEST OF DR. ENRIQUE OLAYA, THE COLUMBIAN MINISTER AT THE NATIONAL CAPITAL, MR. JAMES WAS RELIEVED FROM HIS DUTIES IN THE BUREAU AND LOANED FOR A PERIOD OF THREE TO SIX MONTHS. THE COMMISSION, KNOWN AS THE CONSEJO DE VIAS COMUNICACIONES, WILL CONSIST OF 5 MEMBERS, SELECTED AS EXPERT ADVISORS ON HIGHWAY, RAILWAY, AND WATERWAY TRANSPORTATION. THREE OF THE COMMISSION ARE FOREIGN ENGINEERS, INCLUDING MR. JAMES WHO HAS BEEN APPOINTED THE HIGHWAY EXPERT.

THE REQUEST FOR MR. JAMES' SERVICES FOLLOWS THE WIDESPREAD INTEREST THAT HAS BEEN AROUSED IN SOUTH AND CENTRAL AMERICA BY THE REPEATED SUGGESTIONS MADE IN THIS COUNTRY THAT THE UNITED STATES EXTEND AID TO THE LATIN REPUBLICS IN MATTERS OF ROAD IMPROVEMENT BY THE LOAN OF TRAINED ENGINEERS AS ADVISORS. THERE HAS BEEN CONSIDERABLE DISCUSSION OF THIS MATTER IN RECENT SESSIONS OF CONGRESS.

MR. JAMES HAS A WIDE KNOWLEDGE OF ALL PHASES OF HIGHWAY ENGINEERING PROBLEMS. DURING THE PAST TWO YEARS HE WROTE A SERIES OF ARTICLES FOR "INGINERIA INTERNACIONAL", AN ENGINEERING MAGAZINE WITH A WIDE CIRCULATION IN THE SOUTH AMERICAN COUNTRIES, DESCRIBING VARIOUS STEPS IN THE DEVELOPMENT OF NATIONAL HIGHWAY SYSTEMS. THESE ARTICLES WERE SO FAVORABLY RECEIVED THAT THE HIGHWAY EDUCATION BOARD THOUGHT IT ADVISABLE TO EXTEND THEIR USEFULNESS BY PUBLISHING THEM IN THE FORM OF A BOOKLET ENTITLED "HIGHWAY CONSTRUCTION, ADMINISTRATION, AND FINANCE". THE ORIGINAL ENGLISH VERSION HAS HAD AN EXTENSIVE DISTRIBUTION IN THIS COUNTRY AND THE SPANISH VERSION IS ENJOYING SIMILAR RECOGNITION IN THE LATIN AMERICAN COUNTRIES.

MR. JAMES HAS BEEN CONNECTED WITH THE BUREAU SINCE 1910 AND IS THE AUTHOR OF NUMEROUS PAPERS AND TECHNICAL TREATISES RELATING TO HIGHWAY ENGINEERING. HE WAS TECHNICAL ADVISOR TO THE AMERICAN DELEGATION TO THE INTERNATIONAL TRADE CONFERENCE ON AUTOMOBILE TRAFFIC IN PARIS IN 1926, AND THE SECRETARY OF THE JOINT BOARD OF FEDERAL AND STATE HIGHWAY OFFICIALS WHICH PLANNED AND ARRANGED FOR THE MARKING OF THE UNITED STATES HIGHWAY SYSTEM. HE IS A GRADUATE OF HARVARD UNIVERSITY AND THE MASSACHUSETTS INSTITUTE OF TECHNOLOGY, AND IS A MEMBER OF THE AMERICAN SOCIETY OF CIVIL ENGINEERS, THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS, AND OTHER ENGINEERING SOCIETIES.



LIMITED SUPPLY OF TYPICAL PLANS  
FOR STEEL HIGHWAY BRIDGES, THROUGH-TRUSS SPAN,  
AVAILABLE FOR DISTRIBUTION

A LIMITED SUPPLY OF "TYPICAL PLANS FOR STEEL HIGHWAY BRIDGES, THROUGH-TRUSS SPANS, FOR A ROADWAY WIDTH OF 20 FEET" HAS BEEN RESERVED FOR DISTRIBUTION TO ENGINEERS ENGAGED IN THE ACTUAL DESIGN OF BRIDGES AND TO PROFESSORS INSTRUCTING COURSES IN BRIDGE ENGINEERING. COPIES OF THE PLANS SUFFICIENT FOR THE NEEDS OF THE DISTRICT OFFICES AND STATE HIGHWAY DEPARTMENTS HAVE ALREADY BEEN DISTRIBUTED. THE SUPPLY IS NOT SUFFICIENT FOR GENERAL DISTRIBUTION AND COPIES CAN NOT BE PURCHASED FROM THE SUPERINTENDENT OF DOCUMENTS, GOVERNMENT PRINTING OFFICE.

THE PUBLICATION, WHICH CONSISTS OF 19 PAGES,  $12\frac{1}{4}$  BY  $8\frac{1}{2}$  INCHES, CONTAINS DESIGNS AND GENERAL DETAILS FOR SIMPLE-TRUSS SPAN HIGHWAY BRIDGES DESIGNED TO CARRY THE H-15 LOADING AND CONFORMING GENERALLY TO THE STANDARD SPECIFICATIONS FOR HIGHWAY BRIDGES OF THE AMERICAN ASSOCIATION OF STATE HIGHWAY OFFICIALS DATED JULY 1, 1927. THE DESIGNS ARE ADEQUATE TO CARRY A CONCRETE FLOOR WITH AN ADDITIONAL PAVEMENT LOAD OF 25 POUNDS PER SQUARE FOOT CORRESPONDING TO A 2-INCH BITUMINOUS PAVEMENT, AND A CONCENTRATED LIVE LOAD OF TWO 15-TON TRUCKS.

THE SPAN LENGTHS SHOWN BEGIN AT 60 FEET AND CONTINUE AT INTERVALS OF 20 FEET UP TO 200 FEET FOLLOWED BY SPANS OF 225 AND 250 FEET. ALL DESIGNS ARE FOR A ROADWAY OF 20 FEET.

SYMMETRICAL SECTIONS AND SOLID-ROLLED SECTIONS HAVE BEEN USED WHEREVER PRACTICABLE BECAUSE OF THE FAVORABLE DISTRIBUTION OF STRESS, ECONOMY IN SHOP WORK, AND EASE OF PAINTING, AND LACING BARS THUS GENERALLY AVOIDED. THE OMISSION OF LACING BARS ON TRUSS WEB-MEMBERS HAS MADE IT DESIRABLE TO ADD CROSS BARS ON ONE OF THE DIAGONALS, TO SERVE AS STEPS FOR CLIMBING TO THE TOP CHORD.

A CROWN ON THE ROADWAY FLOOR OF  $1\frac{1}{2}$  INCHES IS USED AND DRAINS ARE SHOWN UNDER THE CURB AT FREQUENT INTERVALS TO CARRY THE WATER AWAY FROM THE FLOOR AND DISCHARGE IT BELOW WITHOUT COMING INTO CONTACT WITH ANY BRIDGE STEEL.

WHILE CERTAIN PARTICULAR SECTIONS ARE SHOWN FOR MEMBERS, TABLES OF AVAILABLE ALTERNATE SECTIONS ARE ALSO GIVEN FOR THE BENEFIT OF THOSE WHO DESIRE TO USE THEM.

